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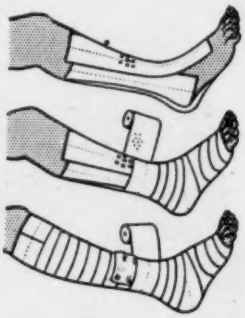

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Predsol Eye/Ear Drops	*0.5%*	*3 cc.*	*Crystal-clear. Contain no insoluble hormone particles*
* *Predsol-N Eye/Ear Drops*	*0.5%*	*3 cc.*	
Predsol Eye Ointment	*0.5%*	*3 gm.*	
* *Predsol-N Eye Ointment*	*0.5%*	*3 gm.*	
Predsol Nasal Drops	*0.1%*	*10 cc.*	
* *Predsol-N Nasal Spray*	*0.025% +0.025% naphazoline nitrate*	*15 cc.*	*Contains a vasoconstrictor*
Predsol Skin Lotion	*0.25%*	*20 cc.*	*Smooth-spreading, crystal-clear, water-miscible base*
Predsol Skin Ointment No. 1	*0.5%*	*5 gm.* *15 gm.*	*Non-greasy base*
**Predsol-N Skin Ointment No. 1*	*0.5%*	*5 gm.* *15 gm.*	*Non-greasy base*
Predsol Skin Ointment No. 2	*0.5%*	*5 gm.* *15 gm.*	*Greasy base*
**Predsol-N Skin Ointment No. 2*	*0.5%*	*5 gm.* *15 gm.*	*Greasy base*

* *Contains 0.5% neomycin sulphate*

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★ *Photographed through crystal-clear Predsol skin lotion—a true solution of prednisolone*

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Makers of ALL you need for corticoid treatment

NULACIN

provides milk-alkali drip therapy without a tube

Maintains continuous control of gastric acidity

Until a few years ago, maintained continuous control of gastric acidity was impossible without hospitalization and discomfort to the patient.

Then a unique treatment in the form of Nulacin tablets was evolved to achieve this desirable state—simply, effectively and without attendant disadvantages. In the ensuing period Nulacin therapy has been amply tried and proved by numerous clinical studies and by therapeutic use in many countries.

A Nulacin tablet placed in the mouth between the cheek and the gum dissolves slowly and releases its contained medicaments at a rate that gives continuous neutralization of the acid gastric juice. Nulacin accomplishes this without any danger of causing alkalosis or other side-effects. The results are comparable with those of intragastric milk-alkali drip therapy.

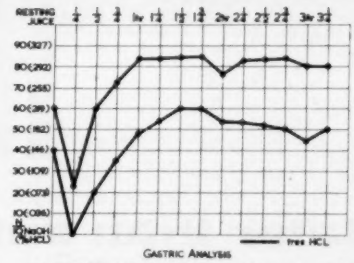
INDICATIONS: NULACIN tablets are indicated whenever neutralization of the acid gastric contents is required: in active and quiescent peptic ulcer, gastritis and other conditions of gastric hyperacidity.

Dosage: Beginning half-an-hour after food, a Nulacin tablet should be placed in the mouth between the cheek and the gum and allowed to dissolve.

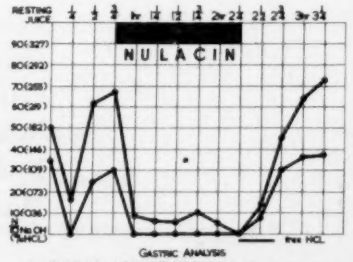
During the stage of ulcer activity, up to three tablets an hour may be required. During quiescent periods, for prophylaxis in peptic ulcer and for the relief of discomfort due to gastric hyperacidity, the dose of Nulacin is one or two tablets between meals.

NULACIN tablets are not advertised to the public and have no B.P. equivalent. They may be prescribed on E.C.10. The dispensing unit of 25 tablets is free of purchase tax. (Basic price to N.H.S. . . . 2/-). Also available in tubes of 12.

NULACIN tablets are prepared from whole milk combined with dextrins and maltose, and incorporate magnesium trisilicate 3.5 grs.; magnesium oxide 2.0 grs.; calcium carbonate 2.0 grs.; magnesium carbonate 0.5 grs.; Ol. Menth. Pip. q.s.



GASTRIC ANALYSIS *Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer.*



GASTRIC ANALYSIS *Same patients as in Fig. 1, two days later, showing the striking neutralizing effect of sucking Nulacin tablets (3 an hour). Note the return of acidity when Nulacin is discontinued.*

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Amer. J. Gastro. 1956, **26:** 665
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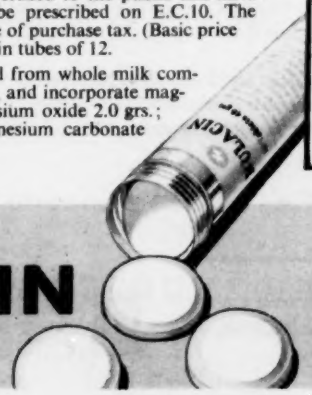
Further references to the literature and full information on Nulacin available on request.



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PHARMACEUTICAL DIVISION
SLOUGH, BUCKS, ENGLAND

For effective antibacterial control in chronic urinary tract infections

MANDELAMINE HAFGRAMS

TRADE MARK

Safer than sulphonamides– Cheaper than antibiotics

Active against a wide range of urinary tract organisms . . . controls antibiotic and sulphonamide-resistant bacteria.

No sensitization

No development of resistant strains

Minimal side effects

Safe for long-term use for all ages

DOSAGE

ADULTS—*Two* **HAFGRAMS** *three times a day*
CHILDREN—*One 0.25G. tablet three times a day*
INFANTS—*Less than one year old, one 0.25G. tablet twice a day*

PRESENTATION

Mandelamine (Menthenamine Mandelate) presented in coated tablets is available in two dosage forms **MANDELAMINE HAFGRAMS MANDELAMINE TABLETS**

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* **When pain is a problem in chronic urinary tract conditions PYRIDIUM is the specific urinary tract analgesic.** *Adult dosage: two tablets three times a day.*

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MAN 393/4

In acute or inflammatory

EYE DISEASES

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*Armour Laboratories brand of HIGHLY PURIFIED long-acting Corticotrophin (ACTH)

HP* ACTHAR Gel rapidly relieves pain and reduces inflammation by the natural physiological means of setting up a barrier between the toxins and cells.

In severe infections where the outcome may be disastrous, before antibiotics can cope with the invading organisms, dramatic improvement often occurs.

Available in 5 ml. vials (20 and 40 I.U. per ml.). Stable at room temperature for two years.

ACTHAR is also available in the form of Lyophilized Powder for Intramuscular injection in vials containing 10, 25 and 40 I.U. per vial, and for intravenous injection in vials containing 30 and 75 I.U. per vial.

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Available to Hospitals only

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NACTON specifically reduces gastric secretion by as much as 70%, providing fundamental, long-term and specific control of hyperacidity, not merely relief of symptoms.

in peptic ulcer

EACH TABLET CONTAINS	2 mg. of (1-methyl 2-pyrrolidyl) methyl benzilate methyl methosulphate

PACKAGES & BASIC N.H.S. COST	50 tablets	4s. 4d
	250 tablets	20s. 0d.

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means lower dosage . . .
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LEDERKYN sulphamethoxypyridazine, Lederle's unique sulpha drug, simplifies sulpha therapy because of its outstanding advantages over other sulphonamides. Its low 1 tablet a day dosage means better tolerance and less likelihood of side effects. Its rapid absorption leads to quick diffusion into the blood . . . its slow excretion rate means high therapeutic blood levels for long periods. LEDERKYN provides round-the-clock therapy with one tablet a day.

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Tablets of 0.5 Gm. Bottles of 24, 100 and 500

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12-hour relief from allergic symptoms with only one

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Each 'Histryl Spansule' capsule contains 5 mg. diphenylpyraline. A 2.5 mg. strength for young children also is available

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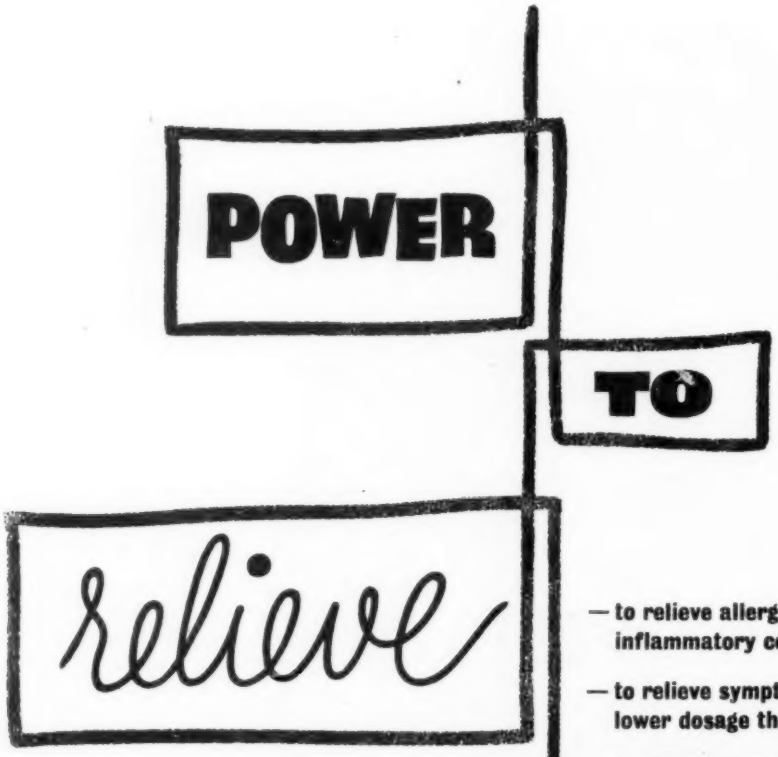

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"Never neglect the opportunity of learning from another doctor: in this context about the contents of his bag"

Practitioner (1957) 179, 626

Bellergal

BY **SANDOZ**

is in the bag!*

Bellergal is always at hand for the symptomatic treatment of a wide variety of **psychosomatic disorders**

TABLETS: 0.1 mg. total alkaloids of belladonna
0.3 mg. Ergotamine Tartrate B.P.
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* Bellergal has a place in "*The Doctor's Bag*"—*Practitioner* (1957) 179, 624

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substantial price reductions of the order of some
FIFTEEN to TWENTY PER CENT

The reductions will apply to the following preparations —

DECORTISYL TABLETS
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'Rauwiloid', a purified and standardised fraction of Rauwolfia serpentina alkaloids, can be considered a basic treatment for hypertension. It lowers blood pressure more effectively than phenobarbitone or its combinations with theobromine and is less likely to cause depression than reserpine.

IMPORTANT

'Rauwiloid' may require more than a week for a significant anti-hypertensive effect to develop. Any previous treatment, particularly barbiturate, should be gradually reduced over this period.

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In most cases 'Rauwiloid' will provide adequate control by itself. Combination therapy is not necessary.

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When a greater hypotensive effect is required, 'Rauwiloid' should be combined with veratrum in the form of 'Rauwiloid + Veriloid'. 'Veriloid' is a biologically standardised alkaloidal extract of Veratrum viride. Such a combination with 'Rauwiloid' enables adequate doses of veratrum to be given for a satisfactory hypotensive response. (See detailed literature).

In Severe or Malignant Hypertension

'Rauwiloid' used in conjunction with ganglionic blocking agents enables a smaller dose of the more potent medicament to be used, thereby minimising side-effects and decreasing the tendency for tolerance to develop.

'Rauwiloid' is available in 2 mg. tablets in bottles of 60 and 500. Dosage, two tablets at night.

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Effective skin penetration

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The first factor is provided by diethylamine salicylate which has been shown to have an absorption rate 300-500 times greater than methyl salicylate.*

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The local effect of these salicylates is to begin their therapeutic action at the site of the lesion. By plain inunction, about 80% of the salicylate content of the cream is taken up into the body and about 60% is excreted in the urine.

VASCUTONEX is non-staining, odourless, and contains no counter-irritants—its therapeutic action depending entirely on the effective absorption and anti-rheumatic action of the salicylates in the formula.

INDICATIONS: Fibrositis and pain associated with muscular and articular rheumatism and all soft tissue pain.

* (1948) *Comptes rend. Soc. de Biol.*, **142**, 819.

Formula
Glycol Salicylate . . . 10% w/w
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Pack: 30 gramme tube.
Basic N.H.S. cost: 2/6d. plus P.T.

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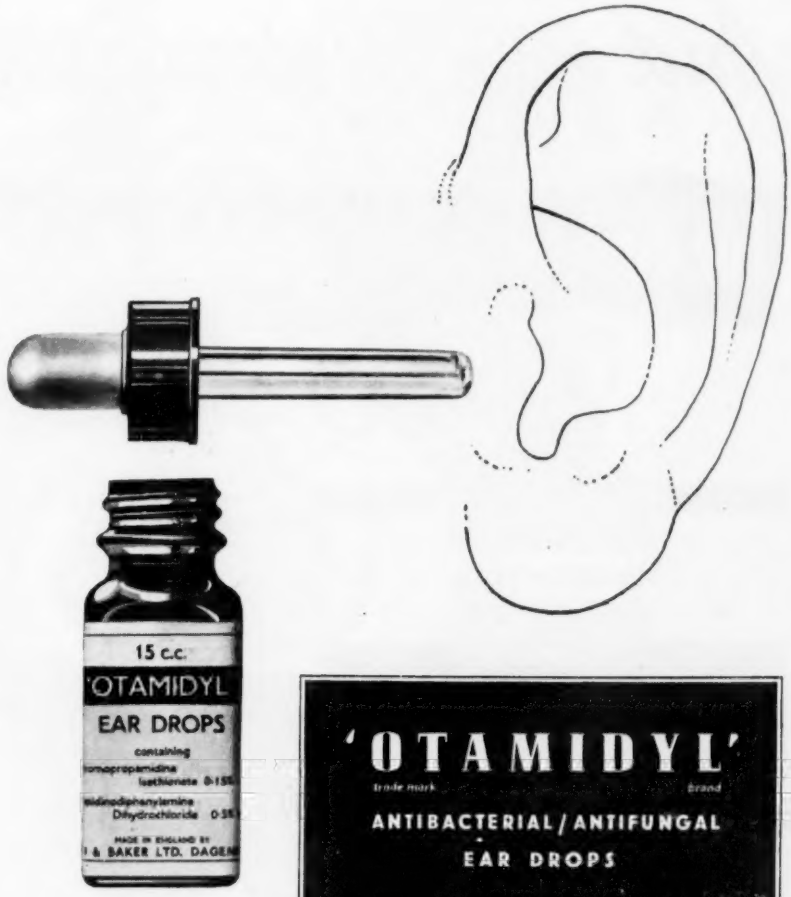

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The persistently discharging ear is a common problem and one which poses many difficulties in effective treatment. In many cases of chronic ear infection, bacteria and fungi can be isolated and treatment should, therefore, be aimed at eliminating both types of infection. 'Otamidyl' contains dibromopropamidine isethionate 0·15% w/v and diamidinodiphenylamine dihydrochloride 0·5% w/v in propylene glycol and is intended for topical application in the treatment of otitis externa and of chronic suppurative otitis media. The antibacterial and antifungal properties of these compounds are retained in the presence of pus, blood, and tissue debris.

Further information is available on request.

PRESENTATIONS:
Dropper bottles of 15 c.c.
Bottles of 100 c.c.

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For dual control of common skin disorders

- Neomycin and Hydrocortisone in a bland, aqueous base
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- Easy to apply—in handy squeeze pack
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Literature and further information gladly sent on request

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'OTOSPORIN'

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The modern method of treatment in otitis externa, chronic otitis media, and infected mastoid cavities, is 'Otosporin' brand Drops.

'Otosporin' is an aqueous suspension containing both neomycin (5 mgm. per c.c.) and polymyxin B sulphate (10,000 units per c.c.) which are together effective against practically all the bacteria found in ear infections. They are unlikely to induce bacterial resistance or skin sensitisation, and neither of them gives rise to cross-resistance or cross-sensitisation to penicillin and other antibiotics. Their effectiveness is visibly enhanced by the hydrocortisone (5 mgm. per c.c.) in 'Otosporin'; this, by reducing inflammation, not only relieves pain, but provides greater access for the antibiotics

'OTOSPORIN' drops
BRAND
issued in bottles of 5 c.c.

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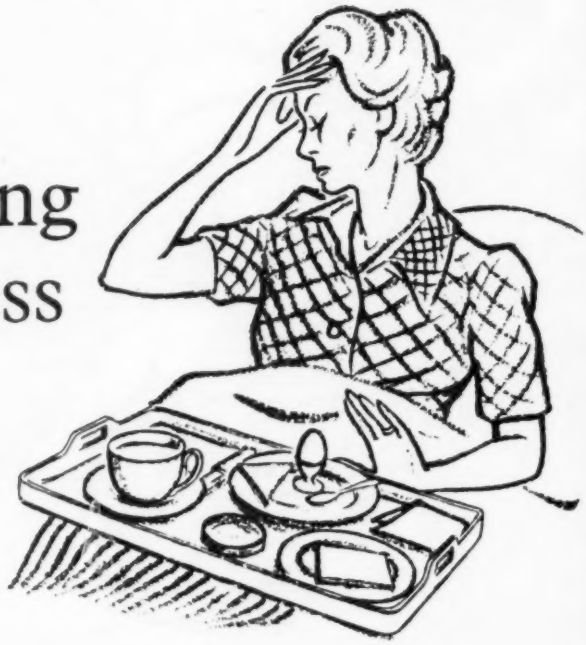
27

Stop morning sickness



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TRADE MARK

TABLETS

Meclozine dihydrochloride 25 mg., plus pyridoxine hydrochloride (vitamin B_6) 50 mg.

"The use of a combination of meclozine dihydrochloride and pyridoxine ('ancoloxin' tablets) in a series of cases of nausea and vomiting of pregnancy is reported. Rapid and effective control of symptoms was obtained in all cases, some of the patients having previously failed to respond to either antihistaminic treatment alone or to pyridoxine alone."

(PRACTITIONER, 1956 (FEB.). 176,201)

DOSAGE: 2 tablets at night. 5 days of treatment is often sufficient for complete relief. Basic N.H.S. cost of treatment—1/4 per day. Containers of 10 and 50 tablets.

Medical Department

THE BRITISH DRUG HOUSES LTD. LONDON N.1

SOCIAL MEDICINE IN DEVELOPING COUNTRIES *

CICELY D. WILLIAMS
B.A., D.M. Oxon., F.R.C.P., D.T.M. & H.
FORMERLY ADVISER IN MATERNITY AND CHILD HEALTH, SOUTH EAST ASIA REGION, WORLD HEALTH ORGANISATION

(*concluded from p. 866*)

Welfare and Health

SOCIAL medicine, as its name implies, does not function in a vacuum; and its exponents must consider other forms of social enterprise. During the last fifteen years experiments in social welfare and community development have been made in various forms in various countries. There have been drives for literacy and mass education, sometimes based on what is known as "fundamental education". In many places clubs have been organised, both for men and for women, with the object of improving agriculture, diet, domestic and community living standards by encouragement of self-help. Aid has been provided for the handicapped, the aged, and the neglected, for as old tribal structures break down there has to be some more sophisticated type of social security to take the place of traditional forms.

Where these experiments have been organised in cooperation with the basic departments of law, health, education, and agriculture, and where they have promoted the teaching of home economics, they have helped medicosocial work. But sometimes they have diverted attention from essentials to less essentials. For instance, money has been spent on recreation halls when schools and clinics were lacking. A campaign to build latrines has not taken into account the fact that their use and maintenance would need a change in habits which could only be achieved by gradual education. In programmes of "health and welfare", the work of the medical department has not been expanded, and "welfare centres" have been launched though trained medical staff was insufficient.

The indiscriminate use of the expression "child welfare" has sometimes hindered work in child health. Thus "child welfare" centres, which were originally devised for countries where child-health services were already provided by hospitals and by doctors in general practice, are being set up in places where proper medical facilities do not exist. It is rather as if the Good Samaritan had started by giving the victim money for his journey before picking him off the road and attending to his injuries.

It might be thought that in countries where there is a high infant and child mortality almost any work for children is better than none. But schemes for welfare have sometimes deferred the establishment of organised health centres and hospitals, and recruited staff which was even more urgently needed by the health services.

Medicine has a long, arduous, and expensive training. Nursing is traditionally overworked and underpaid. But "social work" is regarded as a less exacting profession, and it is often easier to recruit large numbers of social workers than one or two nurses. The social services sometimes offer not only an easier training and better salaries, but also better working conditions and better transport facilities. As a result there may be no pupils at an excellent training school for health nurses, while in the nearby "community development" training centre large numbers are preparing for "health and welfare".

In one place a new health and welfare project was started in an area where health was a major problem. It began by a complete house-to-house census. Later a medical unit was set up; but, though it was well staffed and equipped, it was little used by the people. It was then pointed out that the original census had been made not by the medical but by the social workers. I believe that had the medical workers taken part in this initial stage of the work they would have made their contacts when the people were most receptive, and the centre would have got off to a better start. As it was the medical staff missed their opportunity, and, in the face of many and untouched health problems, there was relatively little that the "social workers" could do.

Some countries where rapid changes are taking place have serious problems of neglected and delinquent children. Their maternal and child health services are still rudimentary, doctors cannot give enough time to the clinics, and the hospital provision for sick children is inadequate. The health visitors have too large areas to cover, and spend so much of their time in travelling, that they have little left for visiting or keeping in touch with non-cooperative parents. The authorities in these countries are now being urged to spend more money on children's homes and children's officers. If they could instead be induced to expand and improve their maternal and child health services, this not only would be more economical, but most of these social complications and disasters would be avoided and both physical and mental health would be improved.

Where epidemics of preventable diseases monopolise the hospitals, doctors take steps to prevent these diseases. Where hospitals are crowded with accidents, behaviour problems, gunshot and stab wounds, alcoholics, and the usual flotsam and jetsam of social tides and storms, the doctors' duty is not only to salvage but also to try to prevent. Certainly social welfare and community development have a valuable part to play in health education, in adult education, and in organisation of voluntary work. They can do much to extend the social usefulness of the medical departments. If doctors and nurses were better trained in the social functions of medicine, they would be able to cooperate more effectively in community development schemes.

Strains of Adjustment

The sophisticated countries have their own peculiar health problems, such as cardiac emergencies, peptic ulcers, allergies, and dental caries. These are all beginning to appear in the developing countries. No less serious are the problems in mental health, including the angry adolescents of all ages, the suburban neurotics, and a variety of social misfits.

In the primitive village, behaviour is remarkably standardised. Health and survival may be uncertain, but discipline and a certain social security are assured. Many sophisticated people lack the poise, reserve, and dignity conspicuous in some of the less sophisticated communities.

As territories develop economic independence and achieve more responsibility for self-government, more

* Abridged from the Milroy lectures for 1958, delivered before the Royal College of Physicians of London on Feb. 4 and 6.

posts become available for men and women with training and skills which are very different from those needed in the scattered farms or isolated villages of a previous era. But education brings new stresses. It may separate the child from his unlettered relatives. He leaves a world of uniformity which does not demand decisions and where every experience is shared with the family and with the community, and enters a world which he cannot share with his fellows. He is confronted with enlarged possibilities but with the embarrassment of choice. Too often he develops what is now called "cross-cultural shock".

The education demanded or offered conforms to the orthodox European standards, leading to university qualifications. Much of it is alien to some of the developing countries and this, too, produces a sort of unreality. Of late, efforts have been made to modify curricula so as to make them more applicable to local conditions; but this is not always easy. Though mechanical and scientific facts are the same all over the world, they are still strange to the primitive village.

The permissiveness of modern education imposes an added strain on pupils accustomed to a stricter discipline.

These stresses of education often show themselves in restlessness. There is a tendency to flit from job to job, not only in search of higher wages but in order to explore as many openings as possible. Often there is difficulty in achieving any sort of self-criticism.

But even those who are not exposed to the strains of education have to adjust themselves to an unfamiliar monetary system, to town life, to regular work, to altered food habits, to commercial pressures, and to the relaxation of traditional authority. Inevitably new disciplines and responsibilities impose a considerable strain, and it is not uncommon to find disorderly behaviour among workers who have found a new freedom and a new wealth but have failed to accept new sanctions. Students in schools and colleges, and men and women in responsible posts may likewise prove unable to bear these stresses. Cases of hysteria, schizophrenia, and other disorders are not uncommon. Some recover, but others cannot use their enlarged opportunities. In some areas the Christian missions have done much to provide stability and standards of conduct in a changing world. In many of the mission hospitals equipment may be of a poor standard, yet the social medicine and the educational services are excellent.

The indices of health are not only rates of mortality and morbidity but also the incidence of violence, crime, alcoholism, delinquency, and inadequacy. If the medical services in developing countries were more aware of their social functions, they would become more respected as instruments of social policy.

Assessment of Needs

Vital Statistics

The advanced countries can turn to vital statistics and records from the hospitals and medical services for guidance on their policy. But in many of the developing countries vital statistics do not exist or are quite inaccurate, while hospital and other records may be both unrepresentative and unreliable.

Where major epidemic diseases are prevalent, it is obvious, without waiting for any statistical analysis, that these must be combated. The next stage is reached when endemic diseases, such as malaria, yaws, and schistosomiasis, loom large. These diseases can be diagnosed either by inspection or by fairly simple microscopy. Their incidence can be assessed by surveys, and there has been a tendency to permit the prevalence or absence of these diseases to obscure other parts of the health picture.

For instance, the municipality of Singapore in the years 1935–40 was free from smallpox, cholera, and plague. Malaria was well controlled and yaws and filariasis almost unknown. It was therefore described in the reports as "healthy", or "remarkably healthy", though beriberi and tuberculosis were common, while the infant-mortality rate was over 150.

In the absence of vital statistics, some information may be gathered from census figures, from sample areas, or from analogous conditions where statistics are available.

The infant mortality is generally a fair index of the health of a community. But the following figures from communities at three stages of development show that the disadvantages of bad conditions bear most heavily on children between the ages of 1 and 5 :

	Death rate	*Birth-rate*	*Infant mortality*	*Mortality in 2nd to 5th years*
England 1955	10	15	25	0·9
Jamaica 1948	13	31	86	13
Egypt 1947	22	38	205	49

Thus in Egypt in 1947 the total death-rate was only about twice that of this country in 1955; the infant mortality was eight times as high; but the toddler mortality was no less than fifty times higher. It is the 1–4 age-group that is the most sensitive index.

The contrast between the different countries can be expressed in a different way. For instance, in Sweden less than 5% of the total deaths take place under the age of 5 years. In Malaya, over 40% of the deaths are in the under 5's, and in Mexico nearly 50%

Records in villages in the Gambia and Tanganyika gives infant-mortality rates of 308 and 420 respectively. From these we can get some idea of the enormous wastage of child life which is going on.

It is impossible to overestimate the importance of this wastage. In my experience it has a profound effect on the lives of the people. A high child mortality creates severe stresses—physical, emotional, and economic. It breeds fatalism and apathy. In the overpopulated countries it is a most tragic and expensive method of population control.

Surveys

In areas where vital statistics are not available, attempts have been made to assess health by surveys. These have sometimes proved useful, but they can be misleading unless great care is taken to ensure that standards of comparison are valid.

A survey is commonly conducted by a specialist in one branch of medicine or in one particular disease. He may be well qualified to identify every case of leprosy, or trypanosomiasis, or eye disease, or schistosomiasis, but he is often unable to assess the importance of his specialty in the total health picture.

In a survey the mathematical chances of meeting a chronic disease are, of course, very much greater than those of meeting an acute one. In malaria, the blood may show parasites for many years; with leprosy or blindness people may survive 40 or 50 years; and diseases such as these may be recognised unfailingly. But there is relatively little chance of seeing the diseases that mainly affect the children. Gastro-enteritis may kill in a few days; respiratory diseases and acute beriberi may kill in a few hours.

It is often said that malaria is the agent chiefly responsible for a high infant mortality; but it is hard to say whether the cause is not malaria plus malnutrition, which in itself may be due to dyspepsia or recurrent enteritis. European medicine has learnt to shun the double diagnosis; but in developing countries doctors must be prepared to find a great complexity of diseases. The exact composition may show geographical and seasonal variations, but it is not rare for children to have five or six different diseases at the same time. A typical combination would be malaria, ascariasis, beriberi, rickets, bronchitis, and scabies.

Most surveys are ill equipped to observe the genesis and development of disease and very few have been conducted by pædiatricians. Some depend on assembling the population in groups for inspection—when, in my experience, sick children are often left at home. Though a survey may give an idea of the extent to which malnutrition exists, it will seldom throw much light on the causes.

Surveys by anthropologists and by social anthropologists sometimes lead to constructive suggestions, but sometimes merely to further surveys. They are liable to concentrate on one aspect of the problem. It used to be anthropological measurement; more recently it has been the dream life or the sex life, the initiation rites, the mother-child relationship, or the kinship pattern. They seldom pay much attention to the part played by ill health, or by menaces to health in determining human behaviour. If repeated surveys are carried out, and especially if they are not followed by constructive action, they may produce a sort of allergy and a non-cooperative community. In fact, surveys should not be lightly undertaken. Much time and money can be wasted that would have been better spent on improving permanent medical facilities for treatment and for observation.

Records and Histories

Sometimes useful information can be gathered from hospital or dispensary figures. But these, again, must be treated with caution. In one area it was found that only 5% of the deaths in hospital were in children under 5 years of age, and yet in that area, half the total deaths were in the under-5s. Some hospitals do not give the age of the patients in their registers, so that without going through individual case-sheets one cannot find how many are children.

Some observers have tried to collect information from personal histories; but these, too, can be misleading. In some areas women are anxious to prove their fertility and will claim to have had more pregnancies than they have actually achieved. In others the parents are unwilling to discuss the numbers of their children, for " if we count them today, tomorrow they may die ". Again, others simply forget.

In fact there is no short cut to assessment of status, needs, or resources. Only by gaining the confidence of a people is it possible to discover either the facts or the attitudes and potentialities. Even in countries where statistics are available their value must ultimately depend on the observer. His experience, his powers of observation, and his diligence are the deciding factors in any form of assessment. Many aspects of health cannot be expressed statistically. But they cannot therefore be ignored.

A Neglected Specialty

The primitive community depends on children for wealth and for survival. More children mean a bigger, stronger tribe, more hunters, more field workers, more security for old age. The primitive community also accepts as inevitable that perhaps half its children will die before maturity. Nearly everywhere, except in certain overcrowded urban conditions, babies are welcomed with joy—but with little confidence.

Medical departments have achieved spectacular success in controlling diseases, but improvements in the standard of living and of education have not kept pace, and too often child care has been neglected. Disease control campaigns have led to a fall in the death-rates, but the birth-rates remain high, and a too rapid increase in population may jeopardise progress.

Yet the countries, such as New Zealand, Scandinavia, and the United Kingdoms, which have the highest standards of child care and health, are not countries with high birth-rates. It is only when people learn to have confidence in the survival of their children and pride in their future, that they begin to see the desirability of limiting their families to the number they can expect to look after properly.

Efforts are being made in some places to encourage family planning. But this cannot be forced upon a reluctant population even by the most totalitarian regime. It must come as the result of improved parental responsibility. It is through the maternal and child health services that responsibility can be encouraged and that birth-control techniques may be taught.

In 1553 Sir Thomas Phaire [4] listed the diseases by which " most commonly the tender age of chyldren is chiefly vexed and grued ". His forty-odd headings included:

> Stiffness of the limmes; watrying eyes; scabbynesse and ytche; canker of the mouth; streytnesse of the wynde; feblenesse of the stomake and vomiting; colyke and rumblyne of the guttes; fluxe of the belly; wormes; failynge of the skynne; chafyng of the skynne; leanenesse; lyse.

The conditions among children in the developing countries today are better described in his book than they are in some books on tropical medicine, which sometimes give more attention to counting the hairs on the head of the mosquito, and the contours of the œsophagus of the larval nematode than to the disorders prevalent among the children.

In many of the developing countries maternal mortality is high. Early marriage, repeated pregnancies, and perhaps extensive female circumcision may lead to abnormalities and complications. Sometimes these are due not so much to neglected obstetrics as to anæmia, malnutrition, malaria, and helminths. In many areas women bear the burden of agricultural and laborious domestic work. They may habitually carry heavy loads at every stage of pregnancy and of lactation. As yet the effect of physical overwork on the incidence of premature labour, hæmorrhages, ruptured uterus, and failure of lactation has been insufficiently studied: in fact the social aspects of midwifery need more attention. But much is being done. Maternity work is popular; obstetricians are often appointed; and in many countries there has been rapid progress in the training of midwives.

The position as regards child health is much less satisfactory.

In many of the developing countries there is little or no specialist care for children in wards or outpatient departments. There is nobody to teach, advise, or supervise child care. Even if international or other funds are

4. Phaire, T. Boke of Chyldren. (Edited by A. V. Neale and H. R. E. Wallis. Edinburgh, 1955.)

available for treatment or research, there is no pædiatrician to devise suitable programmes.

If a doctor is recruited who happens to have a special interest or qualifications in pædiatrics, he may not be given appropriate recognition, and may turn his attention to some subject offering better prospects. As there is no hope of building up a special department, there is no continuity of staff. Without continuity, research is restricted, records are poorly kept, follow-up is neglected, and progress is impossible.

Some sections of reports on maternal and child welfare make no reference whatever to children. Some mention that most of the children attending "well baby clinics" are in fact sick, but give no information about any treatment provided. Hospital records rarely give the ages of patients, and even where there are children's wards there may be no cooperation between them and the welfare centres, and no follow-up.

Welfare clinics may be under the jurisdiction of a medical officer of health who has little experience in pædiatrics and none in tropical pædiatrics. Health visitors trained in Europe may know little of the conditions or the diseases of the area to which they are appointed. Sometimes, being imbued with the idea that they should do preventive and not curative work, they turn away sick children or refer them to some medical assistant with little or no pædiatric experience. Again, the welfare centres may refuse attention to children over the age of 18 months or 2 years, though the 1–4 age-group is known to be in great need of help. Sometimes the health visitors are kept busy with maternity cases, or are given so little transport that they have small opportunity to visit in the homes.

These are serious defects in the organisation of child health work. There are places however where magnificent work has been done. In the rural areas of Singapore Island the infant mortality was reduced from 267 to 90 in eleven years by a most efficient and appropriate maternal and child health organisation. In Ilesha in Nigeria and in Vellore and other places in India the idea is being introduced that the children's clinics should be conducted from, and in close association with the children's departments in a hospital. If such integration is more widely acccepted, it will lead to great improvement in child health, in nutrition, and in the standard of living. Success will depend on the calibre of the pædiatrician and perhaps even more on the continuity of his appointment.

The pædiatrician who goes to a developing country will find that he must be adaptable. The type of work to which he has been trained in a more sophisticated region may have done little to prepare him for his new responsibilities.

He will have to acquire a great deal of local knowledge of the position and work of women, attitudes towards the child, local traditions, food habits, and resources.

He will find that instead of dealing with a few rare diseases, he soon has his clinics and his wards overcrowded with large numbers of very common diseases. There is the problem of the multiple diagnosis, when the whole spectrum of disease may be new to him. Necropsies may be difficult to obtain and laboratory equipment rudimentary.

Few or none of the patients arrive with a doctor's letter, and the histories offered by parents may be unhelpful. To the question "What is wrong with the child?" the answer may well be "A witch looked at him" or "A thunderbolt fell on him". Even the age of the child may be unknown.

The pædiatrician may find that his staff knows very little about child health. He must spend a great deal of time training, and teaching nurses and other doctors, and in organising record-keeping and follow-up. In addition he may have to spend much energy on informing his seniors and superiors.

Conclusion

A maternal and child health programme should be concerned with the care of the child, the whole child, and everything to do with the child, including the family. It should include school health. It is obviously one of the finest instruments for social medicine.

Though children under 15 and their mothers may between them comprise over 70% of the population, the maternal and child health service is often looked on as a minor detail in the public-health programme. But, whereas public health is geared to provide impersonal services, maternal and child health is essentially a service to individuals.

If maternal and child health clinics are organised and supervised by a hospital, so that prevention, treatment, and follow-up can be integrated, they are likely to be far more valuable. This integration means the continuing care to families, through episodes of sickness and health, in their problems of nutrition and behaviour, and at various stages of sophistication. In this way medicine can become sufficiently flexible to give adequate and appropriate care to people with rapidly changing needs.

At present too little attention is paid to child health in developing countries. Pædiatricians are not much concerned with the tropics, nor are the tropical experts much concerned with pædiatrics, if we are to judge by the time spent on these subjects in the respective institutes. In the United Kingdom teaching centres for undergraduates, postgraduates, and auxiliary workers could well teach more about child health, both clinical and social, and especially about the problems of the developing countries. More short refresher courses, both in Europe and within the countries themselves, would be useful. In research programmes more emphasis should be placed on long-term observation and less on short-term surveys and on laboratory investigations.

Western, or scientific, medicine has much to contribute to international progress. But its contribution will depend on its appreciation of the social sciences as well as of the biophysical, and it is perhaps through the balanced expansion of the child health services that its most important contribution can be made.

We are continually reminded that life is short and art is long. Life is indeed desperately short in some parts of the world, but art is not yet nearly long enough.

I should like to record my debt to Dr. H. M. M. Mackay and to the late Prof. John Ryle for the help they have given me. I am also grateful to many people in many countries with whom I have worked, and with whom I have watched and discussed these problems. Most of all I am indebted to my patients who ensured that I should become inevitably and intimately concerned with their social as well as with their clinical affairs.

"...We have now described this disease as seen from within and then again from outside. We know now the origin, the progress, and the outcome of the infection, as also the symptoms by which its presence is detected. British medical skill seldom goes beyond that point in its research. Once a disease has been identified, named, described, and accounted for, the British are usually quite satisfied and ready to investigate the next problem that presents itself. If asked about treatment they look surprised and suggest the use of penicillin preceded or followed by the extraction of all the patient's teeth. It becomes clear at once that this is not an aspect of the subject that interests them."—Prof. C. NORTHCOTE PARKINSON, *The Pursuit of Progress*, p. 102; London, 1958.

SYMPTOMS AFTER CHOLECYSTECTOMY

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MOST patients benefit from cholecystectomy; but symptoms continue or develop in 15–20% of patients after cholecystectomy for stones (Judd 1925, Weir and Snell 1935, Macdonald 1943, Mock 1953). Post-cholecystectomy symptoms are probably even commoner after cholecystectomy for non-calculus disease (Bettman and Lichtenstein 1937, Wilson et al. 1936, Meyers et al. 1939, Doubilet 1943). Erroneous diagnosis may lead to ill-advised operation (Gray and Sharpe 1944).

These unsatisfactory results have led to use of the term " post-cholecystectomy syndrome ", which seems to us unsuitable because in many cases symptoms precede cholecystectomy, and the symptoms are not constant enough to be regarded as a syndrome. In some cases they are thought to be due to autonomic imbalance (" biliary dyskinesia "), and in others to cystic-duct remnants with inflammation or stone (Hicken et al. 1947, Garlock and Hurwitt 1951) or neuromas arising from the original operation (Womack and Crider 1947, Troppoli and Cella 1953).

We have investigated the incidence and cause of post-cholecystectomy symptoms, and related these to the reasons for cholecystectomy.

Investigation

Clinical Material

200 patients underwent cholecystectomy between January, 1950, and December, 1956, in one surgical unit in the Western Infirmary, Glasgow; none were operated on by either of us. 141 were traced. We could not contact the others, mainly owing to post-war population shifts; but examination of their records has shown no material difference from the group reported.

The age at cholecystectomy varied from 20 to 79 (mean 57); 79% were aged 40–69. 114 were women and 27 men.

Plan of Investigation

The records were analysed, and 126 patients interviewed. Each was asked for his view of the effect of the operation; and he was directly questioned about specific symptoms. 15 other patients, who could not attend, answered the same questions by post. The length of follow-up was over a year in all cases, over two years in 110, and over five years in 41. Those with significant symptoms were investigated.

Results

Reasons for Cholecystectomy

134 patients (95%) had had definite severe pain before operation—either biliary colic or from acute cholecystitis.

Of the 7 who had no pain, 2 had had intermittent jaundice, 3 had an incidental cholecystectomy at operation for pyloric stenosis or post-gastrectomy syndrome (case 17), and 2 had had flatulent dyspepsia with gallstones and a diseased gallbladder wall.

At operation, the gallbladder was diseased in 106 (75%) cases, and contained gallstones in 129 (92%). It was never removed unless gallstones were present or the wall was obviously diseased. In most cases both conditions were met. The common bileduct was explored in 38 cases (27%); stones were found in 22.

5 patients had secondary biliary-tract operations (table I).

Follow-up

The 141 patients have been divided into three groups.

106 patients (75%) had been completely relieved of all preoperative symptoms.

15 patients (11%) had been relieved of all pain, but on detailed questioning admitted to some symptom of biliary dyspepsia. We felt that these were within the bounds of normal; indeed 4 considered themselves completely cured. Since none suffered any disability, we considered these two groups together as 121 cases (86%) whose symptoms had been relieved by the operation.

20 patients (14%) had significant symptoms after cholecystectomy.

In 18 of the 20 patients with symptoms (table II), the cause was an extrabiliary lesion, most commonly peptic ulcer. In only 2 cases (7 and 13) could symptoms be ascribed to the biliary tract.

In cases 5–12 the presenting symptoms first appeared after cholecystectomy. In only 2 cases (5 and 7) could the symptoms be attributed to the operation.

Case 5.—A woman, aged 68, underwent cholecystectomy for biliary colic, dyspepsia, and jaundice. Stones were found in the gallbladder; the common bileduct was not explored. She was well for four years, then abdominal pain and vomiting began. At laparotomy (since the follow-up interview) adhesions

TABLE I—SECONDARY OPERATIONS IN 5 CASES

Case no.	Cholecystectomy		Time interval	Second operation			Result
	Preceding clinical features	Operative findings		Symptoms	Operative findings	Procedure	
1	Biliary colic; jaundice	50 pea-sized stones in thick G.B.; dilated cystic duct; C.B.D. normal	1 1/3 yr.	Rigors; jaundice; pain	C.B.D. dilated; no stones; no pancreatitis	Sphincterotomy	No symptoms after 7 yr.
2	Biliary colic; no jaundice	One stone in distended G.B.; C.B.D. dilated; no stones in C.B.D.	9 mos.	Rigors; jaundice; pain	C.B.D. 19 mm. diameter; no stones; ampullary stenosis	Sphincterotomy	No symptoms after 3 1/2 yr.
3	Slight jaundice; dyspepsia; pain; hepatomegaly	Chronically inflamed G.B.; C.B.D. dilated; no stones in C.B.D.; cirrhotic liver	10 days	None (postoperative cholangiogram suggestive of stone)	Inflammation head of pancreas	Nil	No symptoms after 3 yr.
4	Biliary colic; dyspepsia; no jaundice	Single stone in thick inflamed G.B.; C.B.D. not dilated	7 yr.	Recurring jaundice	C.B.D. dilated; stone at lower end	Removal of stone	No symptoms after 1 yr.
5	Biliary colic; dyspepsia; no jaundice	G.B. chronically inflamed with stones; C.B.D. normal	4 yr.	Attacks of epigastric colic and vomiting	Adhesions crossing pyloric antrum	Division of adhesions	Too early for assessment

C.B.D., common bileduct; G.B., gallbladder.

TABLE II—ANALYSIS OF POST-CHOLECYSTECTOMY SYMPTOMS IN 20 PATIENTS

Case no.	Sex	Age at cholecystectomy	Findings at cholecystectomy	Time interval after cholecystectomy (yr.)	Cause of post-cholecystectomy symptoms
					Presenting initially after cholecystectomy:
5	F	68	Cholelithiasis	4	Post-cholecystectomy adhesions
6	F	30	Chronic cholecystitis; cholelithiasis	2	Gross obesity; chronic ill health
7	F	65	Thin gallbladder; multiple pigment stones	3	Pernicious anæmia; kinking of supraduodenal C.B.D.
8	F	54	Thin gallbladder; cholesterol solitaire	3	Diverticulitis
9	F	63	Chronic cholecystitis; cholelithiasis	1½	Post-hysterectomy pelvic discomfort
10	F	40	Cholelithiasis	1½	Migraine with bilious vomiting
11	F	54	Chronic cholecystitis; cholelithiasis; duodenal ulcer	3	Obesity; hypertension; angina; duodenal ulcer
12	M	61	Chronic cholecystitis; cholelithiasis	3½	Myocardial ischæmia; renal colic
					Continuing despite cholecystectomy:
13	F	28	Acute cholecystitis; cholelithiasis; stones in C.B.D.	7	Probable stone in C.B.D.
14	F	51	Chronic cholecystitis; cholelithiasis; hiatus hernia	5	Hiatus hernia
15	F	51	Thin gallbladder; cholelithiasis	3	Periodic vomiting of unknown origin
16	M	36	Subacute cholecystitis; cholelithiasis; duodenal ulcer	4	Duodenal ulcer
17	M	65	Thin gallbladder with one pigment stone; anterior Polya gastrectomy with efferent-loop adhesions	5	Post-gastrectomy efferent-loop syndrome
18	F	51	Cholelithiasis	5	Obesity; chronic nephritis
19	F	50	Acute cholecystitis; cholelithiasis	6	Psychogenic vomiting
20	M	52	Thin gallbladder; cholelithiasis; huge paræsophageal hernia	4	Diaphragmatic hernia
21	F	42	Acute cholecystitis	2½	Duodenal ulcer
22	F	42	Cholelithiasis	3	Duodenal ulcer
23	F	54	Chronic cholecystitis; cholelithiasis; gastric ulcer	7	Gastric ulcer
24	F	62	Chronic cholecystitis; cholelithiasis	3½	Obesity; lumbodorsal osteoporosis

C.B.D., common bileduct.

crossing the pyloric antrum were divided. The biliary tree appeared normal. Her symptoms have not recurred in the few weeks since operation.

Case 7.—A woman, aged 65, had a cholecystectomy for attacks of biliary colic and jaundice. A thin gallbladder, with pigment stones, was removed; the common bileduct, which appeared normal, was not explored. Severe addisonian anæmia developed, and responded to orthodox treatment. She continued to complain of right hypochondrial pain. Intravenous cholangiography showed a moderately dilated common bileduct (maximum diameter 15 mm.), with no stone, but a kinking in the supraduodenal part of the duct—possibly caused by adhesions to the gallbladder bed.

In cases 13–24 the term post-cholecystectomy syndrome is inapplicable because the symptoms were present before operation. In some cases, cholecystectomy seems to have been justified since acute biliary symptoms were relieved. In others, where cholecystectomy was done for symptomless gallstones, the original symptoms continued. Only in case 13 were post-cholecystectomy symptoms referable to the biliary tract.

Case 13.—A woman, aged 28, had had severe pain with jaundice. At cholecystectomy in 1950, acute cholecystitis with cholelithiasis was found, and one faceted stone and some mud were removed from the common bileduct. Seven years after operation she has recurring attacks of upper abdominal and back pain with associated nausea, jaundice, and biliousness. There is probably a stone in the common bileduct. Intravenous cholangiography has shown a moderately dilated duct (maximum diameter 13 mm. two years ago, 17 mm. now) and suggests obstruction at the lower end of the duct.

Extrabiliary Causes for Post-cholecystectomy Symptoms

Peptic ulcer.—In 5 of the 20 patients, post-cholecystectomy symptoms were found to be due to peptic ulcer.

At the primary cholecystectomy, gastrojejunostomy was done on 6 occasions for associated pyloric stenosis. Symptoms of ulceration continued only in case 11. Cases 16, 21, and 23 had typical ulcer symptoms for a long period before operation, and they have returned.

In case 17 the cholecystectomy, done during an operation for postgastrectomy symptoms, had no effect on them.

Symptoms due to peptic ulcer can be very easily confused with those due to gallstones. Peptic ulcer has been found in 5% (Bruce 1926), 11% (Meyers et al. 1939), and 8·5% (present series) of patients submitted to cholecystectomy.

Diaphragmatic hernia.—In case 14, acute biliary symptoms were relieved by operation but symptoms of hiatus hernia continued. Case 20 had a cholecystectomy and repair of a huge para-œsophageal hernia; this unfortunately recurred, as did mild symptoms identical with those present before operation. The biliary symptoms did not recur.

Other causes.—Many patients were obese, and in 4 cases their symptoms were clearly due to such associated conditions as angina (table II).

Cases 15 and 19 had intermittent vomiting of obscure origin. No organic cause has been found, and there is evidence that it is psychogenic in both cases.

Post-cholecystectomy Symptoms Arising in the Biliary Tract or Directly due to Cholecystectomy

7 patients (5%) have had postoperative symptoms due

TABLE III—RELATION OF PREOPERATIVE SYMPTOMS AND FINDINGS AT OPERATION TO POST-CHOLECYSTECTOMY SYMPTOMS

Results	Preoperative symptoms			Findings at operation				
	Pain		Jaundice	State of gallbladder *			State of common bileduct	
	Present	Absent		Diseased wall and calculi	Diseased wall and no calculi	Normal wall and calculi	Dilated	Stones present
No symptoms (106 cases)	102	4	30	79	9	18	28	19
Minor dyspepsia only: relief of acute biliary symptoms (15 cases)	14	1	2	13	0	2	2	2
Significant post-cholecystectomy symptoms (20 cases):								
(*a*) Extrabiliary (18 cases)	16	2	2	10*	1	6*	0	0
(*b*) Biliary (2 cases)	2	0	2	1	0	1	1	1
Total (141 cases)	134	7	36	103	10	27	31	22

* In 1 case with significant post-cholecystectomy symptoms due to extrabiliary causes the state of the wall was not recorded, though there was a calculus.

to either associated biliary-tract lesions or the operation. In 4 patients the symptoms were relieved by a second operation (table I).

Stenosis of the sphincter of Oddi.—Cases 1 and 2 had had successful transduodenal sphincterotomy for stenosis of the sphincter of Oddi with cholangitis. The ætiology of this condition is not completely understood; dilators may or may not be responsible (Cattell and Colcock 1953, Brush et al. 1955, Cattell et al. 1957). The terminal intraduodenal portion of the common bileduct is very delicate, and tearing of the mucosa seems very likely to lead to fibrosis.

Pancreatitis.—This is not uncommon in association with gallbladder disease (Weir and Snell 1935, Love 1952, Walters 1956, Cattell et al. 1957). In our experience, the condition, if found at cholecystectomy, tends to settle down subsequently, but in case 3, at re-exploration ten days after the primary operation, an inflammatory mass was found to involve the head of the pancreas. Exploration of the distal end of the common bileduct at the first operation may have resulted in localised pancreatitis from incidental trauma.

Recurrent stone.—At a secondary operation, seven years after cholecystectomy, stones were found in the common duct in case 4. Since the symptoms dated from a cholecystectomy (for acute cholecystitis) when the common bileduct was not explored, the stones were probably missed at the primary operation. Case 13 almost certainly has a stone in the duct, and awaits operation.

Conditions caused by operation.—Adhesions arose in cases 5 and 7.

Results Related to Reasons for Cholecystectomy

There was complete relief of symptoms in 102 (76%) of 134 patients who underwent cholecystectomy having presented with severe pain (table III). Only 2 now have significant symptoms due to biliary-tract lesions.

36 patients had jaundice before operation; 30 (83%) of these are now totally symptom-free and only 2 have residual biliary symptoms of any consequence.

We had intended to study patients with " biliary dyskinesia ", but we have been unable to find one. We conclude that this condition does not arise where cholecystectomy is done for such reasons as in this series.

No normal gallbladders were removed, but in 27 gallbladders (containing stones) the walls looked normal at operation (table III). 7 patients (26%) in this group had significant post-cholecystectomy symptoms—a rather higher incidence than in the whole series (14%). The symptoms were not due to disease in the biliary tract, except possibly in 1 case; but, since 1 in 4 in this group have had a poor result from cholecystectomy, it seems that, if a normal-looking gallbladder with stones is found at laparotomy, other lesions (which may be the cause of symptoms) should be sought.

Intravenous Cholangiography

This was done in 13 of the 20 patients with significant symptoms. The common bileduct was not displayed in 2 cases; in the remaining 11, no cystic-duct stumps were seen.

The ducts were moderately distended (15 mm. and 17 mm.) only in cases 7 and 13. Dilatation of the common bileduct in man has not been found after cholecystectomy by us or other workers lately (Sandweiss and Fulton 1955, Hardie and Israelski 1956, Shehadi 1957).

Summary and Conclusions

The reasons for cholecystectomy have been examined in 141 patients, whose postoperative progress has been studied for one to seven years.

No gallbladder was removed unless it contained stones or was obviously diseased.

121 (86%) of the 141 patients were symptom-free after operation.

Significant symptoms were found in 20 patients (14%); but, in all except 2, the causes were extrabiliary. In 2 others, symptoms may have been caused by operation. Symptoms due to biliary-tract lesions in 4 more patients had been cured before follow-up.

No evidence was found of " biliary dyskinesia ".

The use of the term " post-cholecystectomy syndrome " does not seem justified.

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EFFECT OF CORTISONE ON DEVELOPMENT OF DIABETIC ACIDOSIS

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BECAUSE of the hyperglycæmic effect of adrenal steroids, there has been much interest in the role of the adrenal cortex in the development of diabetic ketoacidosis. It has been suggested on the basis of animal experiment that activation of the adrenal cortex may be a consequence of insulin deprivation (McArthur et al. 1954b) and in turn hasten the development of diabetic acidosis (McArthur et al. 1954a). In man, on the other hand, it is clear that excess 17-OH steroids may induce (Conn et al. 1948, Sprague et al. 1949, Bookman et al. 1953) or aggravate (Perera et al. 1949) a diabetic state, and may be associated with insulin resistance (Sprague et al. 1949), but rarely lead to ketoacidosis (Conn and Fajans 1956). Because of these apparent discrepancies between human and animal studies the present work was undertaken to study specifically the effects of excess cortical steroids on the development of acidosis in diabetic patients.

Methods

8 patients, of ages ranging from 8 years to 65, were studied in hospital. In 7 the diabetes was reasonably well controlled by diet and insulin, but in 1 (case 8) it was of the " brittle " type.

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The patients fasted for thirty-nine hours (from supper of day 0 to 10 A.M. on day 2) during which time water was allowed ad libitum, but no insulin was administered. Blood samples were taken at 9 A.M. and 9 P.M. on day 1, and at 9 A.M. on day 2, and analysed for sugar, total ketones, CO_2-combining power, and, in case 8, esterified fatty acids. In 5 patients an intravenous glucose-insulin tolerance test was done at the end of the period of fasting. All the urine excreted during day 1 was collected and analysed for sugar, total nitrogen, creatinine, sodium, and potassium. After an interval of three to seven days, during which the diet and insulin dosage were the same as those previously established, the experiment was repeated as before except that cortisone acetate was given by mouth in a dose of 50 mg. every four hours beginning at 8 A.M. on day 1, and ending at 8 A.M. on day 2 (total 350 mg.), the last dose thus being administered an hour before the glucose-insulin test.

Ketones (β-hydroxybutrate, acetoacetate, and acetone) were measured by the method of Lester and Greenberg (1948), blood-sugar by that of Folin (1929), CO_2-combining power by that of Van Slyke and Cullen (1917), urine nitrogen by a semi-microkjeldahl procedure, sodium and potassium by flame photometry, chlorides by the method of Wilson and Ball (1928), creatinine by the method of Peters (1942), and serum-esterified-fatty-acids by the method of Bauer and Hirsch (1949). Intravenous glucose-insulin tolerance tests were performed by giving an intravenous injection of 10 g. of glucose with crystalline insulin 8 units over a period of two minutes; blood was then obtained at twenty, forty, and sixty minutes after the injection. The slope of the line relating the logarithm of the blood-sugar content to time was taken as an index of the response to insulin.

Results

Cortisone caused an elevation in blood-sugar in all but 2 patients (cases 6 and 8) (figs. 1 and 2). It had no consistent effect on ketonæmia or CO_2-combining power and did not alter the serum-fatty-acid content in the 1 patient in which this was measured (case 8). The effect on insulin responsiveness was variable (fig. 3); it was diminished in 3 out of 5 patients.

In accordance with many previous observations, cortisone resulted in variable increases in urinary excretion of nitrogen and potassium. Glucose excretion was significant in only 2 patients during the control day of fasting, and cortisone produced a striking increase in both.

Discussion

The development of diabetic acidosis is associated with increased urinary excretion of corticoids (McArthur et al. 1950, Stowers 1951). Though some of this increase may be a renal phenomenon, related to the diuresis usual

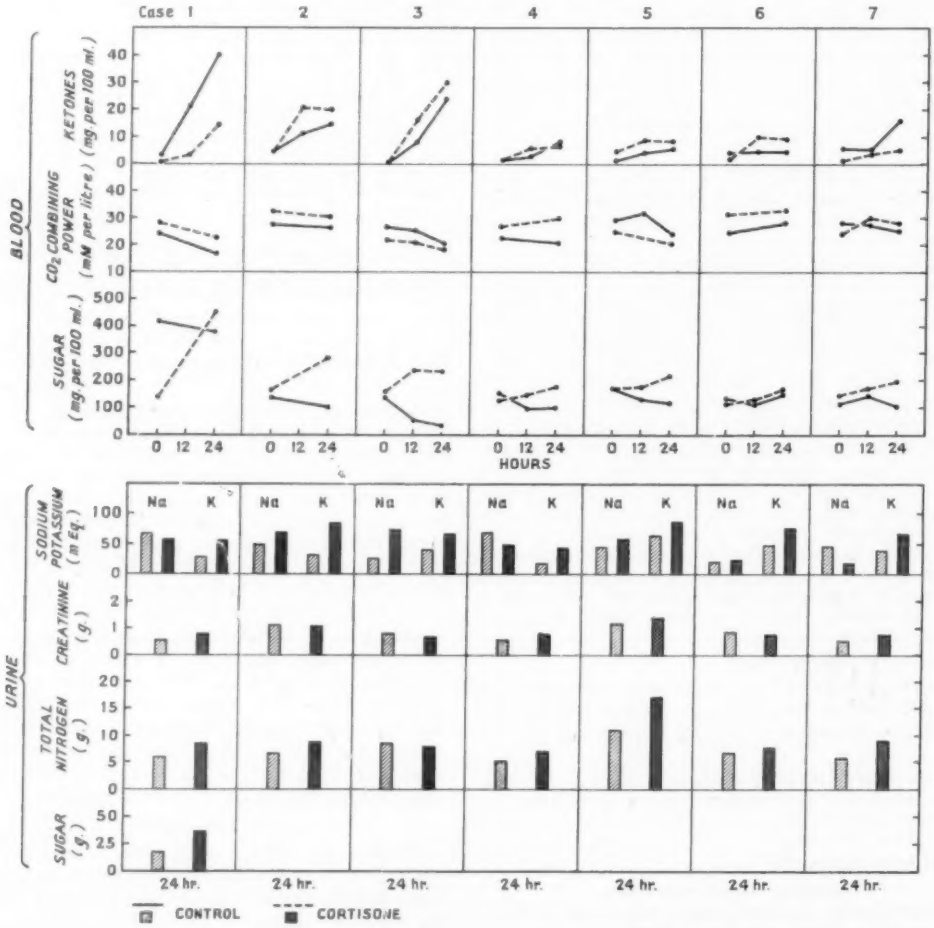

Fig. 1—Metabolic effects of cortisone during fasting in 7 diabetic patients deprived of insulin. Cortisone was given orally in a dose of 50 mg. every 4 hours, beginning at 0, to a total dose of 350 mg.

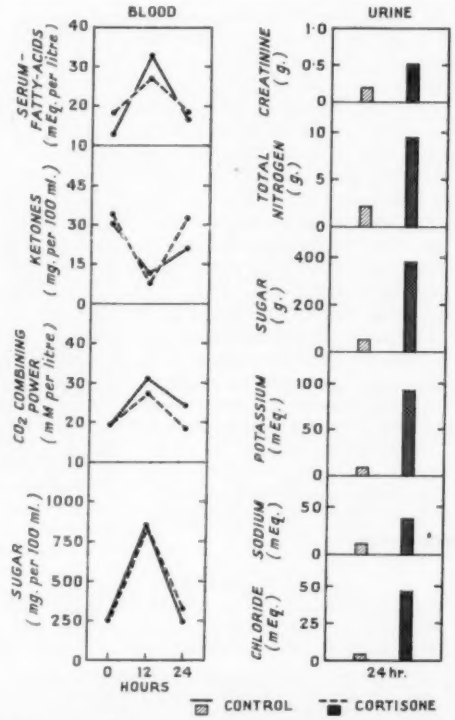

Fig. 2—Metabolic effects of cortisone during fasting in a "brittle" diabetic patient (case 8) deprived of insulin. Cortisone administered as in fig. 1.

in the early stages of diabetic acidosis (Kalant 1955), the finding of elevated plasma-levels of free and conjugated 17-hydroxysteroids (Klein et al. 1955, Wallach et al. 1957) suggests that it is at least partly due to increased adrenal activity. Subsequent work showed that in diabetic dogs stimulation of the adrenal cortex increased the severity of the tissue katabolism caused by withdrawal of insulin, and led to the conclusion that adrenal hyperactivity may hasten the development of diabetic acidosis (McArthur et al. 1954a). Thus it was suggested that insulin lack was a "stress" which activated the adrenal, and the adrenal in turn aggravated the metabolic effects of the insulin deficiency.

The present observations agree essentially with those obtained in dogs (McArthur et al. 1954a) and show simply that the well-known effects of cortisone on tissue

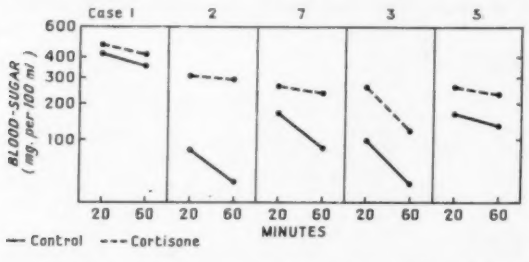

Fig. 3—Effect of cortisone on insulin sensitivity in fasted diabetic patients. The slope of the line relating blood-sugar to time was determined after intravenous injection of glucose (10 g.) and insulin (8 units); the greater the slope, the greater the insulin effect.

katabolism, electrolyte excretion, and insulin responsiveness are seen during development of acidosis as under normal circumstances. Neither here in man, nor in the earlier work with dogs, was an increase in adrenal steroids shown to hasten the onset of ketonæmia or of acidosis (as manifested by a decrease in CO_2 combining power).

The lack of effect on acid-base balance may be due not only to the suppression of ketonæmia (Kinsell et al. 1951), which is probably caused by increased peripheral utilisation of ketones (Kalant, unpublished), but also to the fact that the electrolyte disturbances usually produced by excess adrenal steroids result in alkalosis.

A longer experimental period might have shown that, by causing hyperglycæmia and an increase in glycosuria, cortisone would hasten the depletion of body carbohydrate stores and so indirectly speed the development of ketonæmia. But even in case 8, where cortisone caused a very large excretion of glucose, there was no indication of more rapid production of acidosis.

These observations suggest that adrenal cortical hormones should not be regarded simply as insulin antagonists, but rather that their overall effect in diabetes is a balance between anti-insulin action (increasing glycæmia and perhaps decreasing insulin responsiveness) and antiketonæmic, anti-acidotic action.

Summary

Cortisone was administered to 8 diabetic patients during a twenty-four-hour period of insulin and food withdrawal, to determine its effect on the development of ketoacidosis.

The steroid produced increased glycæmia, insulin resistance, and tissue katabolism, but did not increase ketonæmia or decrease the carbon-dioxide combining power.

It is concluded that cortical steroids do not contribute significantly to the development of diabetic ketoacidosis.

I am indebted to Dr. F. McCall and Dr. E. Harpur for permission to study patients in the wards of the Montreal Children's Hospital.

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CHROMATIN-POSITIVE KLINEFELTER'S SYNDROME (PRIMARY MICRORCHIDISM) IN A MENTAL-DEFICIENCY HOSPITAL

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Low intelligence was found in some patients with Klinefelter's syndrome studied at a male-infertility clinic at this hospital (Ferguson-Smith et al. 1957); the origin of these cases naturally excluded major mental defect. A review of the published reports at this stage revealed several cases of oligophrenia associated with the syndrome; one of the original patients of Klinefelter et al. (1942) was feebleminded and another unintelligent. Pasqualini et al. (1957) found 11 feebleminded among their 31 patients with Klinefelter's syndrome.

In none of the previously published cases does the nuclear sex seem to have been investigated. At the infertility clinic only patients with female nuclear sex showed significantly subnormal intelligence. This suggested that a more severe degree of mental deficiency might exist in other cases. Such patients would tend not to marry, far less to attend an infertility clinic; some might even require institutional care. Accordingly, 325 mentally defective males at Lennox Castle Hospital were tested by the oral-mucosal smear technique of nuclear sexing (Moore and Barr 1955). I report here the results of this survey, including more detailed investigations of 4 patients found to have female nuclear sex. The youth of 2 of these patients made it possible to draw further conclusions about the nature of the syndrome.

TABLE I—NUCLEAR SEX AND GRADE OF MENTAL DEFECT IN 325 MALE MENTALLY DEFECTIVE PATIENTS

Group and grade of mental defect	Nuclear sex: Chromatin-positive (female)	Nuclear sex: Chromatin-negative (male)	No. of patients
Partially selected sample:			
Feebleminded	1	6	42
Imbecile	0	35	
Idiot	0	0	
Unselected sample:			
Feebleminded	2	125	283
Imbecile	0	118	
Idiot	1	37	
Total	4	321	325

Methods and Materials

The initial group of patients was collected for me by one of the medical staff from among the ambulant patients; it was partially selected because he intentionally included an excess of patients thought to present clinical hypogonadism (table I). The discovery of female nuclear sex in case 4 (table II) prompted the study of further cases, taken from each of the main grades of mental defect but otherwise unselected. This larger sample included 65 low-grade defective children from a branch hospital and 62 high-grade educable defective children, in the additional hope of discovering prepubertal cases of Klinefelter's syndrome. The remainder consisted of the whole population of several male adult wards at Lennox Castle.

An oral smear was obtained from each patient, and the degree of mental defect was recorded; no other investigation or examination was made except in the 4 cases with female nuclear sex, and in these only after this diagnosis had been confirmed. Results of certain of these investigations are shown in table II. No attempt was made to discover chromatin-negative cases of Klinefelter's syndrome (with male nuclear sex).

Fig. 1—Case 1, aged 14.

Clinical Findings

Case 1.—A boy aged 14 (fig. 1) was admitted in July, 1957, as a feebleminded person beyond parental control, with a mental age of 9½ years. He is of average height and weight for his age but has particularly small testes and no development of secondary sex characteristics. There is no gynæcomastia.

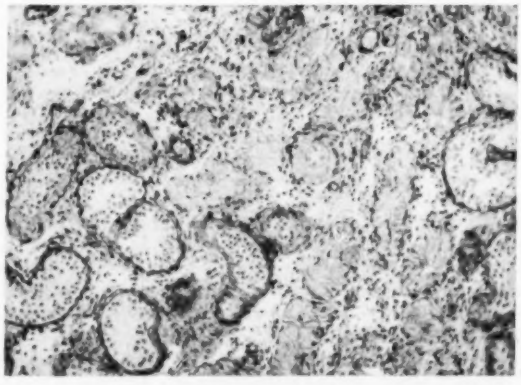

Fig. 2—Case 1: testicular biopsy specimen showing numerous small, completely hyalinised ghost tubules; scanty Leydig cells; occasional immature tubules lined by undifferentiated Sertoli cells; and complete absence of germ cells. (Masson. × 80.)

Histology.—Right testicular biopsy showed numerous small immature seminiferous tubules lined solely by undifferentiated

TABLE II—RESULTS OF SPECIAL INVESTIGATIONS

Case no.	Age (yr.)	Wechsler intelligence test: Full scale I.Q.	Wechsler intelligence test: Verbal I.Q.	Wechsler intelligence test: Performance I.Q.	Raven's matrices (1956)	Mill Hill vocabulary scale	Nuclear sex: Oral smear	Nuclear sex: "Drumstick" neutrophils	Nuclear sex: Skin biopsy	Urinary excretion of hormones in 24 hr.: Gonadotrophin (mouse units)	Urinary excretion of hormones in 24 hr.: Total 17-ketosteroids (mg.)	Urinary excretion of hormones in 24 hr.: Œstrone (µg.)	Urinary excretion of hormones in 24 hr.: Œstriol (µg.)	Urinary excretion of hormones in 24 hr.: Œstradiol (µg)	Length of testis at biopsy (mm.)
1	14	(67)*	—	—	Grade v (below 5th percentile)	Grade v	30%	6/118	Positive	>20 <40	5·2	1·5	Nil	3·7	18
2	14½	(<25)†	—	—	—	—	36%	6/637	,,	—	—	—	—	—	30
3	28	52	66	52	Grade v	Grade v	34%	6/301	,,	>40 <80	25·3	4·7	Nil	Nil	22
4	52	66	64	72	Grade v	Grade iv (below 25th percentile)	49%	2/1000	,,	40	6·5	2·2	Nil	1·7	17

* Assessed by the Stanford-Binet test. † Low level of development prohibited more detailed assessment.

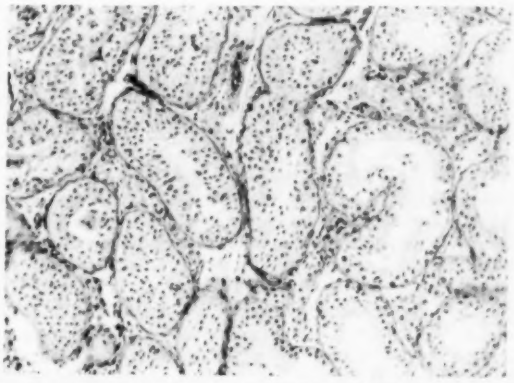

Fig. 3—Case 2: testicular biopsy specimen showing immature tubules without germ cells (left) and several tubules showing scanty spermatogenesis (right); Leydig cells slightly increased; and no hyalinisation of tubules. (Haematoxylin and eosin. × 80.)

Sertoli cells. There were occasional small completely hyalinised "ghost" tubules, and Leydig cells could just be recognised. In one tubule several spermatogonia and a few primary spermatocytes were seen. Left testicular biopsy (fig. 2) showed that a third of the tubules were small "ghost" tubules; Leydig cells were more obvious but not present in excess. Sections stained by Weigert's elastic method showed a normal proportion of elastic fibres around the Sertoli-cell-lined tubules but a complete absence of elastic tissue in or around the small "ghost" tubules.

Case 2.—A boy, aged $14^1/_2$, who was admitted at the age of 6 years, is an idiot, has frequent epileptic seizures, and is doubly incontinent. His secondary sex characteristics are moderately well developed; his external genitalia are adolescent, and pubic and axillary hair are present. His testes are small. There is no gynæcomastia.

Histology.—The histological appearances of testicular biopsy material (fig. 3) were remarkable; most of the seminiferous tubules had no germ cells and were lined by Sertoli cells only. No "ghost" tubules were found, and there was no evidence of any hyalinisation of the tubules. A considerable proportion of the tubules (at least 20% of those in the right testis) showed active but scanty spermatogenesis to the spermatid level. The number of Leydig cells was slightly increased.

Fig. 4—Case 3, aged 28.

Case 3.—A man aged 28 (fig. 4) had been excluded from the ordinary school at the age of 11 years and had attended special schools; but his conduct was most unsatisfactory, and he was admitted to Lennox Castle as a feeble-minded person in need of institutional care. He presented the typical features of Klinefelter's syndrome, with moderate bilateral gynæcomastia and small testes. His prostate was impalpable.

Histology.—Testicular biopsy showed Sertoli-lined tubules among large aggregates of abnormal Leydig cells; most of the tubules were small "ghost" tubules identical in size and appearance with those seen in case 1. Scanty spermatogenesis, with maturation to spermatocytes only, was seen in two tubules. A section stained for elastic tissue (fig. 5) showed normal amounts around the Sertoli-lined tubules but none around the "ghost" tubules.

Fig. 6—Case 4, aged 52.

Case 4.—A man aged 52 (fig. 6) had been involved in numerous homosexual incidents before admission to the Hospital at the age of 19. During the past twelve months he has complained of early fatigue and is losing weight. His skin is smooth and soft, and there is general lack of body, facial, and axillary hair; definite slight bilateral hyperplasia of breast tissue is present, the testes are soft and small, and the prostate is impalpable. The patient looks at least twenty years older than his actual age.

Histology.—Bilateral testicular biopsy showed an almost complete absence of recognisable testicular tissue. Biopsy of his left testis showed only the hyalinised "ghosts" of tubules in an amorphous connective-tissue stroma; there were no Leydig cells. Biopsy of his right testis showed a similar condition with the addition of a single small well-vascularised island of abnormal Leydig cells constituting the only sign of activity. Weigert's elastic stain revealed two types of "ghost" tubules: (1) most of them were small "ghost" tubules without elastic tissue, identical with those observed in cases 1 and 3; and (2) very much larger "ghost" tubules (fig. 7) containing a considerable quantity of elastic tissue, and of about the same size as the Sertoli-cell-lined tubules in case 3 (fig. 5), resembling the completely atrophic tubules commonly found at necropsy in the testes of elderly men. In this case the diagnosis of nuclear sex from the blood-cells would have been misleading (table II).

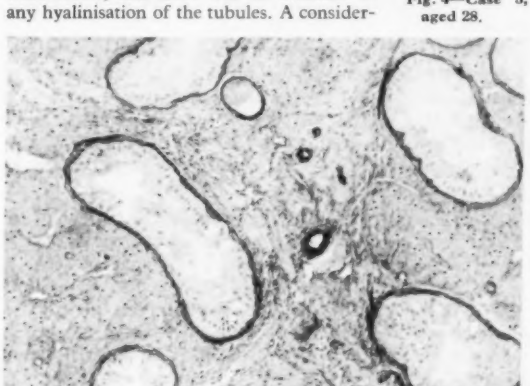

Fig. 5—Case 3: testicular biopsy specimen showing large aggregates of abnormal Leydig cells; several tubules without germ cells but with normal amounts of elastic tissue; and small ghost tubules with no elastic tissue (centre). (Weigert's elastica. × 80.)

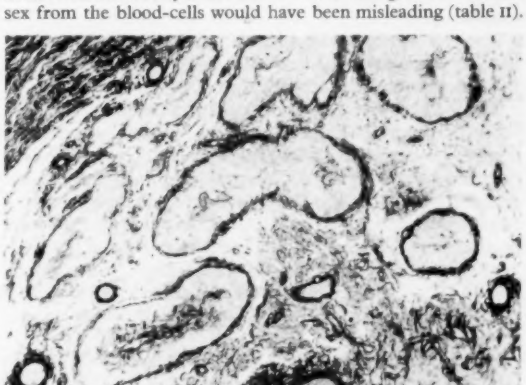

Fig. 7—Case 4: testicular biopsy specimen showing large ghost tubules containing elastic fibres at edge of solitary mass of Leydig cells (lower right). Compare with fig. 5. (Weigert's elastica. × 80.)

Family Studies

The families of these 4 patients were investigated with particular reference to hereditary factors and to ætiological factors operating either during pregnancy or in early childhood. No evidence of inheritance of Klinefelter's syndrome was found. As is usual in such cases, an explanation of the disability was offered in each case:

The mother of case 1 had active pulmonary tuberculosis during her pregnancy.

The mother of case 2 conceived at the age of 43 and was treated during the first five months of her pregnancy with stilbœstrol and barbiturates in the mistaken belief that her symptoms were due to the menopause.

It was claimed that case 3 was well until involved in a serious street accident at the age of 9 years.

The mother of case 4 was aged 46 when she gave birth to the child prematurely after antepartum hæmorrhage.

A family history of mental defect was found in case 1 only, the mother having two feebleminded stepbrothers. There is a history of twins in the families of cases 2, 3, and 4 but none of the propositi is a twin, and at present there is no evidence to regard this as more than an incidental finding. The relatively advanced maternal age at the time of conception in 2 cases, and the chronic illness during pregnancy in 1 other, are noteworthy in view of the hypothesis of Witschi et al. (1951), who suggest that " blastophthoria " may be the primary cause of chromatin-positive Klinefelter's syndrome.

Discussion

Incidence

It has previously been shown that patients with chromatin-positive Klinefelter's syndrome form 3% of all subfertile patients attending a male-infertility clinic (Ferguson-Smith et al. 1957), and further calculations based on this material suggest that the incidence of these patients among the general population is at least 1 in 10,000. The present survey seems to indicate that the incidence is higher among mentally defective persons than in the general population. Although the present series is too small to form the basis for a precise figure, it is not unreasonable to suppose that about 1% of male mentally defective persons requiring institutional care have female nuclear sex. In fact, chromatin-positive Klinefelter's syndrome appears to be one of the commonest conditions associated with primary amentia yet described in males.

Pathogenesis

In spite of its small size this series is important in relation not only to mental defect but also to the histogenesis of Klinefelter's syndrome.

The great majority of previously published cases have been in young adults because, under normal conditions, it is only young adults who present themselves for investigation with this disorder (Nelson 1956). In the present series the oral-mucosal-smear technique of nuclear sexing as a screening test has led to the discovery of 2 younger patients and 1 older patient, and the testicular histology in these patients is especially interesting. (But for this survey case 1 would have been considered to be an example of delayed puberty, and case 2 would have been entirely missed.)

Certain conclusions may be drawn from examination of the testicular biopsies in these cases.

(1) *The condition begins before puberty.*—The hypothesis that a disturbance of Leydig cells at puberty causes hyalinisation of the seminiferous tubules and progressive atrophy of the germinal epithelium (De la Balze et al. 1952) can no longer be held. Although case 2 is postpubertal, no hyalinisation of tubules was found, and there was a complete absence of germ cells in most of the tubules. In case 1, despite the prepubertal findings, completely hyalinised " ghost " tubules and a scarcity of Leydig cells were very striking features on left testicular biopsy. The absence of elastic tissue in these " ghost " tubules may be taken as evidence that where the tubules degenerate they do so long before puberty. The results of work in progress, extending the studies of De la Balze et al. (1954), indicate that these elastic fibres normally appear in the tunica propria at about the age of 10 years. Degeneration after this age, as in some of the tubules in case 4, produces larger " ghost " tubules with persistent elastic tissue (fig. 7). Therefore treatment at puberty can no longer be expected to prevent sterility in adult life, because the germ cells are absent far earlier.

(2) *Hyalinisation of the seminiferous tubules is not invariable in Klinefelter's syndrome.*—Hyalinisation of the seminiferous tubules has long been considered to be characteristic, if not pathognomonic, of testicular biopsies in Klinefelter's syndrome. Its absence in case 2 indicates that this is not an essential criterion and explains the relatively larger size of the testes in this patient.

(3) *A considerable reduction in the number of germ cells appears to be the most significant defect.*—Normally it is possible to identify spermatogonia in the supporting epithelium of the seminiferous tubules from a very early stage of embryogenesis, through infancy and childhood, up to the age of onset of spermatogenesis. The scarcity of germ cells in these 2 younger patients suggests that there was either an initial failure of germ cells to reach the developing gonad during gonadogenesis or a selective destruction of germ cells at a later stage (but before puberty). The variable degree of damage to the tubules possibly supports the latter hypothesis. Spermatogenesis is considered to be rare in Klinefelter's syndrome; therefore it is remarkable that it was found in 3 of the 4 present cases. Maturation of germ cells was incomplete in each case, but mature spermatozoa have previously been reported in association with female nuclear sex in 3 cases (Bunge and Bradbury 1956, Nelson 1956, Ferguson-Smith and Munro 1958). The proportion of tubules showing spermatogenesis in case 2 (fig. 3) is striking, and the theoretical possibility of fertility in such a person is not so remote as might previously have been imagined.

(4) *Severe secondary testicular atrophy with premature senility may be superimposed.*—Case 3 presents a hitherto undescribed appearance of one of the later stages of the natural history of Klinefelter's syndrome. At a comparatively early age there was a complete failure of the gonads, with atrophy of the remaining tubules, which became large " ghost " tubules, and disappearance of Leydig cells, associated with symptoms of androgen deficiency.

Although more cases must be studied before more definite conclusions can be drawn, it appears that the most significant change at puberty is hyperplasia of the Leydig cells. Further surveys of the type described here will almost certainly reveal earlier stages of Klinefelter's syndrome and improve our knowledge of its pathogenesis.

Nomenclature

Since the discovery that only some of the patients with Klinefelter's syndrome have female nuclear sex it is clear that the syndrome can no longer be considered to be a single entity and must be critically reassessed (Nelson 1957). Alternative names, such as " seminiferous tubule dysgenesis " (Grumbach et al. 1957), " female pseudohermaphrodites with gonadal dysgenesis ", and " pseudomales " (Witschi et al. 1957), are either insufficiently descriptive or may be misleading; none has any particular clinical significance.

It has been found of practical value in this area (where 36 chromatin-positive cases have been discovered in the

past eighteen months) to consider the classification from the clinical viewpoint. The problem that presents is essentially the differential diagnosis of a patient with small testes—the one invariable finding in Klinefelter's syndrome. Thus, all cases recognised in this way and showing no evidence of secondary testicular atrophy or of pituitary disease are classed as primary microrchidism and, on the basis of nuclear sexing, subdivided into chromatin-negative and chromatin-positive microrchidism.

Sterility and microrchidism are constant features of the syndrome; variable findings include gynæcomastia, azoospermia, eunuchoidism, increased urinary excretion of gonadotrophins, and decreased excretion of 17-ketosteroids. In view of the findings described here, mental defect and hyalinisation of the seminiferous tubules must now be added to the list of variable features, at least in chromatin-positive microrchidism.

Summary

By the oral-mucosal-smear technique of nuclear sexing 4 of 325 male patients at a mental-deficiency hospital were found to have female nuclear sex: 3 were feeble-minded, and 1 was an idiot.

Findings in 2 patients aged 14 are of especial interest as regards the pathogenesis of Klinefelter's syndrome.

Primary microrchidism is suggested as a name for the condition.

I am grateful to Dr. Ronald C. MacGillvray, physician-superintendent, Lennox Castle Hospital, for permission to publish and for guidance throughout the investigation, and to members of his medical and nursing staff, especially Dr. J. Campbell and Dr. G. L. Ligertwood. I am also indebted to Mr. W. S. Mack for admitting the patients under his care and for the testicular biopsies; to Dr. A. B. Telford Govan for the hormone assays; to Mr. Andrew McGhie for intelligence testing; to Mr. Norman L. Russell for technical assistance; and to Mr. G. Kerr for the photomicrographs. Cases 3 and 4 were reported at the Symposium on Nuclear Sex in September, 1957.

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GASTRIC CANCER AND ATHEROSCLEROSIS

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IN a series of papers Elkeles (1949, 1950, 1953, 1956) has pointed out that between gastric carcinoma and aortic calcification a certain relationship exists which may be of diagnostic importance. According to his investigations peptic ulcer of the stomach is in a high percentage of cases accompanied by calcification of the aorta in elderly people, 64% of people aged more than 50 showing roentgenological signs of calcification, whereas patients of the same age-group with gastric cancer show much less or no calcification.

Busch (1924) had already concluded that aortic sclerosis was less pronounced in cancer patients than in other people of the same age-group, and Casper (1932) corroborated this finding.

Since gastric carcinoma is common in Iceland but arteriosclerosis is much less common there than in many other countries (Dungal 1936, 1953, 1955) we examined our necropsy material with a view to studying the relationship between gastric cancer and aortic sclerosis.

Material

Since aortic sclerosis is only exceptionally seen in persons aged less than 50 in Iceland, and since other workers have mainly limited their statistics to persons aged more than 50, we decided to limit our quest also to those aged 50 or more. In this age-group there were 1430 necropsies in 1934–56, including 149 cases of gastric carcinoma. Since, however, the descriptions of the aorta were insufficient for our purpose in 320 cases, among which were 45 of stomach cancer, and 77 cases in which the description of the stomach and/or duodenum was insufficient, there remained 1033 cases containing satisfactory descriptions of stomach, duodenum, and aorta. Of these 480 were in females and 553 in males.

Classification

The condition of the aorta was classified into four stages: 0, smooth, without intimal changes; +, atheromatous patches without noticeable calcification; ++, atheromatosis and calcified plaques; and +++, much calcification. The results are shown in table I.

TABLE I—GASTRIC CANCER AND AORTIC SCLEROSIS

Age (yr.)	Sex	No. of cases	Atheromatosis and calcification of aorta				Percent. calcification (++ and +++)
			0	+	++	+++	
50–60	F	11 } 31	7 } 21	4 } 10			
	M	20	14	6			
61–70	F	18 } 47	4 } 18	7 } 16	6 } 12	1	38·9 } 27·7
	M	29	14	9	6		20·7
71–80	F	6 } 16	1 } 3		4	1 } 4	83·3 } 50·0
	M	10	2	5		3	30·0
81–100	F	4 } 10	1 } 3		1 } 3	2 } 3	75·0 } 60·0
	M	6	2	1	2	1	50·0
Total	F	39 } 104	13 } 45	11 } 32	11 } 19	4 } 8	38·5 } 26·0
	M	65	32	21	8	4	18·5

Atheromatosis 32·3%. Calcification 26%.

In this table there are relatively many smooth aortas, not only in people age 50–60, where all are either smooth or showing slight atheromatous changes, but also in the older age-groups. Even in the oldest age-groups (70 or more) there are people with relatively smooth aortas.

Another striking thing in this table is the higher rate of calcification in women than in men. Although the numbers are small, the lower rate of calcification at all ages in men and the total of 38% calcification in women against 18·5% in men indicate a definitely greater tendency towards calcification in women. Compared with the fact that the incidence of gastric cancer in men is about double that in women, this may have some significance.

Gastric Ulcer and Aortic Sclerosis

For comparison we listed all cases of gastric ulcer found in the same material and the condition of the aorta in these cases (table II). Gastric ulcers are rather infrequent in Iceland; in 3285 necropsies of patients of each sex we found only 94 (2.87 %).

Although the numbers are not large, they indicate that the incidence of atheromatosis is about the same as

TABLE II—GASTRIC ULCER (INCLUDING SCARS) AND CONDITION OF AORTA

Age (yr.)	Sex	No. of cases	Atheromatosis and calcification of aorta				Percent. calcification (++ and +++)
			0	+	++	+++	
50–60	F	7 } 11	4 } 5	2 } 4		1	14·3 } 18·2
	M	4	1	2	1		25·0
61–70	F	4 } 12		2 } 5	2 } 4		50·0 } 41·7
	M	8	2	3	2	1	37·5
71–80	F	4 } 10		1	2 } 5	1 } 3	75·0 } 80·0
	M	6	1		3	2	83·3
81–100	F	4			1	3	100·0
50–100	F	19 } 37	4 } 8	5 } 10	5 } 11	5 } 8	52·6 } 51·4
	M	18	4	5	6	3	50·0

Atheromatosis 27·0%. Calcification 51·4%.

in cancer, but that calcification of the aorta is much more common (almost 100%) than in gastric cancer.

Duodenal Ulcer and Aortic Sclerosis

Of duodenal ulcers we found only 17 cases, which showed the same aortic conditions as the stomach ulcers (table III).

Discussion

Our necropsy records are in agreement with those of Casper (1932), Elkeles (1949, 1953, 1956), and others, who found a considerably lower rate of aortic calcification in cancer cases.

Elkeles (1956) found this not valid for lung cancer, although very pronounced for stomach cancer. Neubürger (1930) found that carcinoma was but rarely associated with arteriosclerosis of the brain. Wanscher et al. (1951) also found considerably less arteriosclerosis in their necropsy material of 822 cancer cases than in 1013 control cases.

Juhl (1955) investigated 12,355 necropsy records, of which 3725 were related to cancer, and found that aortic lesions were significantly less pronounced in the cancer cases than in the others, and this difference in calcification applied also to the coronary arteries. Juhl suggests that cholesterol accumulates in the tumour and is consequently diverted from the arteries.

TABLE III—DUODENAL ULCER AND AORTIC SCLEROSIS

Age (yr.)	Sex	No. of cases	Atheromatosis and calcification of aorta				Percent. calcification (++ and +++)
			0	+	++	+++	
50–100	F	10	3	3	3	1	40·0
	M	7	2	1	2	2	57·1
Total		17	5	4	5	3	47·1

Atheromatosis 23·5%. Calcification 47·1%.

Casper (1932) also suggests a direct causal relationship between cholesterol metabolism and tumour growth and cites several workers, among them Borst (1924) and Jaffé and Eliassow (1927), who found that experimental tumours were easier to produce if the animals were fed cholesterin before and during the experiments.

Roffo (1925) considered a disturbance of cholesterin metabolism as one of the determining causes which led to the imbalance terminating in cancer. Elkeles (1956, 1957), on the other hand, interprets these facts as a diminished tendency to cancer in people with calcified aortas and thinks that cancer develops more easily in people with smooth aortas. This explanation seems to be in better accordance with our findings. We often find people aged 70 or more with smooth aortas, some with cancer and others without, whereas others of the same age-group have more or less severely atherosclerotic aortas, some with atheromatous ulcers. It is unlikely that such changes would show retrogression due to mobilisation of cholesterol esters to a cancerous growth, and no such transfer has been reported.

Our experience tends to confirm the explanation of Elkeles (1956, 1957), Busch (1924), and others that old people with smooth aortas are more likely to contract gastric cancer than are those with greater intimal changes. Our knowledge of cholesterin metabolism is insufficient to offer a satisfactory explanation of this apparent causal relationship.

Summary

In 1033 necropsies of people aged 50 years or more there were 104 gastric cancers. A comparison was made between the condition of the aortas in these cases of gastric cancer and in controls of the same age (1) without cancer and (2) with ulcers. In gastric cancer the incidence of atheromatosis was 32·3% and of calcification of the aortas 26%, against 31·3% and 47·3% in the controls and 27·0% and 51·4% in the ulcer cases.

A causal relationship is assumed between cholesterin and calcium metabolism on the one hand and the development of cancer on the other.

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ANÆSTHESIA FOR RAMMSTEDT'S OPERATION

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INFANTILE hypertrophic pyloric stenosis was not widely recognised until Hirchsprung reported 2 cases in 1877. Mack (1942) has described the evolution of its treatment. Surgical treatment is now recognised as giving the best results; and the operation is the pyloromyotomy of Rammstedt (1912) which was based on earlier pyloroplasty procedures (Fredet and Dufour 1908, Weber 1910). This operation is one of the most successful in abdominal surgery, and in skilled hands a recovery-rate of about 99% is to be expected.

Anæsthesia for Rammstedt's operation is still a matter of some controversy. General anæsthesia is preferred by some (Page and Jewesbury 1937, Ladd et al. 1946, Schaefer and Erbes 1948, Ladd and Gross 1950, Pasma 1954), and local analgesia by others (Levi 1941, Browne et al. 1951, Black and Love 1957, Handfield Jones and Porritt 1957). The advantages and disadvantages of each method of anæsthesia are discussed by Black and Love (1957). I do not here intend to advocate one method to the exclusion of others, or to compare results obtained with different techniques; the series is obviously far too small for such a purpose. Such comparisons (Cope 1948) have shown no significant difference in results attributable to the method of anæsthesia. The choice of one or other method should depend more on the skill, preference, and ability of surgeon and anæsthetist than on the condition of the patient or on an arbitrary decision by either person.

NUMBER OF CASES

Material

Between January, 1949, and July, 1957, 150 patients with infantile pyloric stenosis were admitted to the United Oxford Hospitals and treated by Rammstedt's operation. 8 were operated on under general anæsthesia; in 6 of these 8 cases the anæsthetist concerned was more familiar with general anæsthesia than local analgesia for surgery of the newborn, and in 2 the diagnosis had not been established with complete certainty before operation. An uncertain diagnosis was regarded as a definite indication for general anæsthesia. 142 patients were operated on under local analgesia, and I intend to discuss the use of local analgesia for this operation and describe the technique that was followed. Local analgesia is preferred for two main reasons: (1) it causes less systemic upset; and (2) feeding is more rapidly re-established postoperatively and the risk of postoperative vomiting, due to the additional disturbance of a general anæsthetic, is eliminated.

In the 150 cases the proportion of boys to girls was 5:1; the distribution according to weight and age at the time of operation is shown in figs. 1 and 2. The child aged 16 weeks was born 7 weeks prematurely. Eight surgeons performed the operations, but 90% of the patients were operated on by one of four surgeons. In every case the operation was carried out through a right upper trans-rectus incision.

Preoperative Treatment and Premedication

In the United Oxford Hospitals, all patients with infantile pyloric stenosis are admitted to the pædiatric wards, and the surgeon and anæsthetist are called into consultation by the pædiatrician at an early stage. The treatment is always surgical, and medical treatment with antispasmodic drugs is never tried.

The condition is not regarded as an acute surgical emergency, and a period of at least twelve hours for observation and assessment in the ward is allowed in even the fittest of infants who show no systemic upset. Should the child be seriously ill, with evidence of dehydration and alkalosis, this period of preoperative preparation is extended if necessary to correct the fluid and electrolyte balance. One very ill child was so deficient in chlorides on admission that he was having convulsions. These were stopped only by infusion of saline solution; attempts to control them with amylobarbitone sodium and paraldehyde had been unsuccessful.

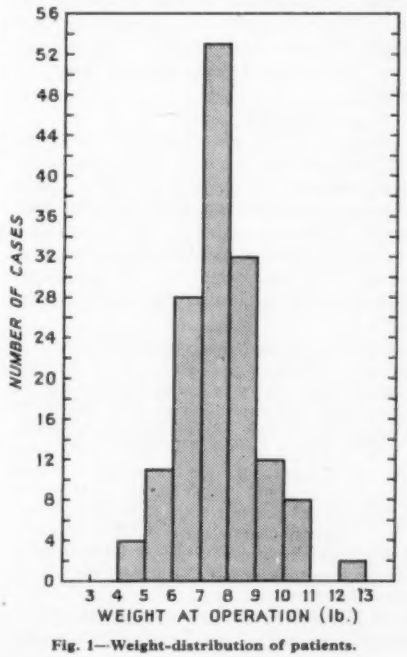

Fig. 1—Weight-distribution of patients.

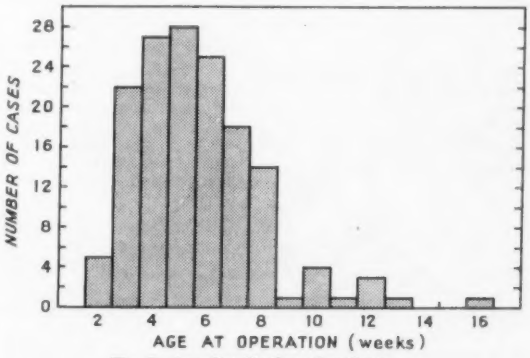

Fig. 2—Age-distribution of patients.

Although in this series the preoperative treatment was in the hands of the pædiatricians, this does not hold good in all hospitals. Anæsthetists are often directly concerned at an early stage with the treatment of these patients and the resuscitation of those who are gravely ill. An anæsthetist must, then, be fully conversant with all aspects of transfusion in infants. It is dangerously easy to overtransfuse a 7-lb. baby.

An hour before the operation is to be performed, a rubber catheter (10 or 12 French) is passed through the nose into the stomach, which is washed out to remove any mucus or retained food. This tube should be left in position until after the operation. It prevents distension of the stomach with air—a condition that is a great hindrance to the surgeon—and is a safeguard against the regurgitation of stomach contents into the pharynx during the operation. Chloral hydrate is used for sedation and is given through the stomach-tube after the washout. It is administered as a mixture with the following formula:

Chloral hyd.	gr. 3
Syrup	minims 5
Aq. anethi	ad 1 dram

Chloral produces its effect rapidly, since it is absorbed from the stomach, and it has a wide margin of safety. It was found advantageous to base the dosage of chloral on gr. 1 per lb. body-weight; such a dose quietened the child and had no dangerous depressant effects. The dose of chloral depends not only on the child's body-weight but on his fitness. In a few cases morphine gr. $^1/_{80}$ (0·75 mg.) was administered, but this practice was abandoned owing to the danger of respiratory depression. Atropine sulphate gr. $^1/_{200}$ (0·3 mg.) was given to all patients an hour before operation, except infants weighing less than 5 lb., to whom gr. $^1/_{300}$ (0·2 mg.) was given. No untoward reaction, attributable to the atropine, was seen in any child.

When the stomach has been washed out and the premedicant drugs given, the child is carefully bound on to a padded crucifix and left well covered in a room where the temperature is kept between 75° and 80°F until the time of operation.

Anæsthetic Technique

Since heat-loss in these patients must be kept to a minimum, the period for which the trunk is exposed for anæsthetic and surgical procedures should be as short as possible. The temperature of the anæsthetic-room and operating-theatre should be 75–80°F. Spirit should not be used to prepare the skin, and cetrimide solution

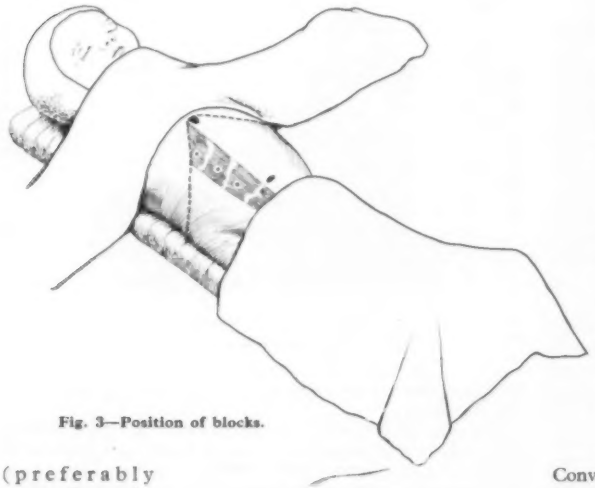

Fig. 3—Position of blocks.

(preferably warmed) can be advantageously used by both surgeon and anæsthetist.

The area of infiltration and the blocks inserted are shown in figs. 3 and 4. The subcutaneous tissues are infiltrated over the right rectus muscle from the umbilicus to a point above the coastal margin. The three nerves supplying the right upper rectus muscle are blocked. The tendinous intersections are intimately adherent to the anterior rectus sheath and may impede the flow of solution from one segment to the next. The intersections vary slightly in position and in density of the fibrous tissue of which they are composed, and one or more may in fact be absent. Since an upper right transrectus incision was used in all cases, no block of the left rectus was needed. Altogether 10–12 ml. of fluid is sufficient—2 ml. for each block and the rest for infiltration.

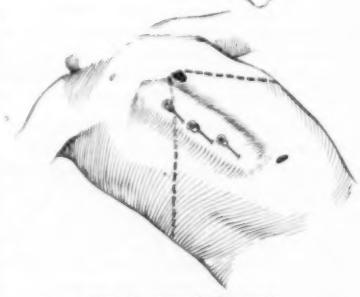

Fig. 4—Area infiltrated.

The drugs used were procaine, lignocaine (in nearly three-quarters of the cases), and cinchocaine (in 2 cases).

Because of possible toxic reactions to local analgesic drugs, some workers prefer general anæsthesia for Rammstedt's operation (Sington 1923, Hewer 1923); the risk of death ensuing from failure to adjust the dose of the drug to the weight of the patient was pointed out by Macintosh (1949).

The importance of using adrenaline in the solution and thus retarding absorption of the drug is often insufficiently emphasised. Levi (1941) and Browne et al. (1951) advocate the use of 0·5% procaine. Levi, using a solution containing no adrenaline, regards 10 ml. as a safe maximum volume. Browne et al. using a solution containing adrenaline, do not recommend the use of more than 15 ml. Ward-McQuaid and Porritt (1950) use a solution containing 0·3% procaine with 1/600,000 adrenaline added; 15 ml. of this solution contains 50 mg. of procaine, which is a safe maximum dose for a baby of 7 lb.; it is equivalent to 1 g. of procaine in a 10 st. adult, which is usually regarded as a safe upper limit for this drug. Certainly the use of procaine in a strength of more than 0·5% is unnecessary and dangerous.

A solution of lignocaine 0·25%, containing 1/400,000 adrenaline, was used in most of the present cases and produced satisfactory anæsthesia. 12 ml. of this solution, containing 30 mg. of the drug, is ample for a 7-lb. infant; with a heavier patient the volume of solution can be increased proportionately, and with a smaller or a very sick infant the dose should be decreased.

Ward-McQuaid and Porrit (1950), in their series of 100 cases, had 1 death due to procaine poisoning; 20 ml. of 1% procaine without adrenaline (200 mg. of procaine) was given. Another patient had toxic reactions after infiltration with 25 ml. of 1/1000 cinchocaine with 1/100,000 adrenaline, but this child recovered.

2 babies in the present series had toxic reactions to the local analgesic drug (in each case lignocaine); in both cases the standard teaching on dosage of local analgesic drugs had not been observed, and the solutions used contained no adrenaline.

An infant weighing 8 lb. 11 oz., was given 12 ml. of 1% lignocaine without adrenaline (120 mg. of lignocaine). Convulsions and collapse followed in a few minutes and were controlled only by injecting thiopentone sodium via the jugular vein. Oxygen was administered and the child recovered. The operation was postponed for twenty-four hours and then successfully carried out under local analgesia using 0·25% lignocaine solution.

An infant, weighing 7 lb. 8 oz. was given 20 ml. of 0·5% lignocaine solution without adrenaline (100 mg. of lignocaine). The operation was almost completed when convulsive movements of the face and limbs developed. Again barbiturate was used to control the spasms and oxygen was administered. The child recovered.

These cases emphasise the importance of keeping the total dose of local analgesic below dangerous levels and of using a dilute solution. The total weight of drug that may be safely injected depends somewhat on the strength of solution used; the more dilute the solution the slower the absorption of the drug into the blood-stream (Moore 1955). Adrenaline in the fluid still further delays the absorption, but the dose of this drug, too, must be kept as low as possible. Dilutions of 1/400,000–1/600,000 are adequate, and stronger concentrations are both unnecessary and dangerous.

Operation

Five to ten minutes should elapse between the final injection of local analgesic and the start of the operation; the more dilute the solution the longer it will take to exert its full effect. During this period the child must be kept covered and warm. If the operation is started too soon the infant can be quietened subsequently only by a general anæsthetic. Before the infant is placed on the operating-table, the rubber mattress can usefully be warmed with a hot-water bottle.

The use of a rubber teat containing cotton-wool soaked in a mixture of glycerin and dilute port or brandy is a time-honoured nostrum to divert the baby's attentions during the operation, but it can lead to swallowing of air if the content of the cotton-wool becomes exhausted. This presents no difficulty if the stomach-tube has been left in situ; but it has been suggested that the use of a teat without a hole which has been dipped in the glycerin mixture still further lessens the tendency to aerophagy (I. MacDonald personal communication). Since gastroenteritis is a serious complication of Rammstedt's operation, scrupulous attention must be paid to the cleanliness of the rubber teat and to the hands of the anæsthetist who is administering the mixture.

The use of the catheter as a stomach-tube during the operation diminishes the risk of regurgitation of stomach

contents into the pharynx owing to the surgeon's manipulations. Regurgitated fluid can cause spasm of the larynx, particularly if the stomach still contains chloral—a substance which is very irritant to the larynx. In 2 cases in this series, where the catheter was not left in the stomach, regurgitation of stomach contents produced laryngospasm that persisted alarmingly long. On both occasions the operation had to be halted while the pharynx was aspirated and the child resuscitated with oxygen.

Results and Discussion

There were 2 deaths in this series, both in patients who had been operated on under local analgesia.

The 1st was a child, aged 8 weeks, who had been jaundiced since birth and had been admitted in the 1st week of life from a maternity hospital. Pyloric stenosis developed while he was in hospital, and, although he was critically ill with steadily increasing jaundice, it was felt justified to operate on the pylorus in the hope that correction of one pathological process might improve chances of recovery from the other. The operation proceeded satisfactorily, but the child died twenty-four hours afterwards. At necropsy widespread necrosis of the liver was found, but the ætiology of this could not be determined. This child died of liver disease and the pyloric stenosis was an incidental complication that had no real bearing on the fatal outcome.

In the 2nd case, an infant aged 6 weeks, operation and the postoperative period were uneventful, and the child was discharged home on the fifth day. A week after discharge an infection of the abdominal wound developed and the child was readmitted to hospital. Gastroenteritis then developed and failed to respond to treatment; he died four weeks after operation. This child would almost certainly have recovered if he had not been readmitted to hospital and exposed to the risk of cross-infection which caused the gastroenteritis.

The mortality for this series is thus 1·3%. It is, however, disturbing that failure to observe standard practice in the use of local analgesia nearly brought about 2 more deaths.

Local analgesia does not provide satisfactory operating conditions in every case; in some it must be supplemented with light general anæsthesia, particularly when the abdomen is being closed. Aird (1957) found general anæsthesia necessary in 1 case in 10. Of the 142 cases in this series operated on under local analgesia, 12 required general anæsthesia as a supplement. Most of these 12 patients were anæsthetised by junior members of the department.

Local analgesia, particularly when adrenaline is used in the solution, is regarded by some workers as inadvisable on the ground that it may impair healing of the abdominal wound and thus predispose to sepsis (Ladd and Gross 1950, Benson and Warden 1957). Of the present 142 patients operated on under local analgesia, only 3 had any sepsis and delay of healing of the wound; and in only 1 case was it necessary to resuture the abdominal incision.

This series of cases follows chronologically on that published by Ward-McQuaid and Porritt (1950). They reported 11 deaths in 100 patients, and it is encouraging to note the improvement in results over recent years.

Summary

Of 150 infants submitted to Rammstedt's operation 142 were operated on under local analgesia.

Analgesia was induced by blocking the three nerves to the right upper rectus with, usually, 12 ml. of a solution containing 0·25% lignocaine and 1/400,000 adrenaline. 2 infants had convulsions when larger amounts were given.

2 infants died—1 of unrelated liver necrosis and 1 of intercurrent gastroenteritis.

I should like to thank Dr. Victoria Smallpeice, physician in charge of the children's department, United Oxford Hospitals, for permission to quote from her records and for much advice and criticism; the surgeons, particularly Mr. A. Elliot-Smith and Mr. A. S. Till, who operated on most of the cases, for their interest and assistance; Dr. J. V. Mitchell for help in preparing this paper; and Miss Marjorie Beck for the illustrations.

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STOKES-ADAMS ATTACKS TREATED WITH CORTICOTROPHIN

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THERE are at present few means of treating Stokes-Adams attacks. Only adrenergic substances and atropine are widely used, and they often have no effect on the condition or produce only temporary improvement. We report here sustained improvement following the use of corticotrophin in three cases of Stokes-Adams attacks which did not respond to conventional treatment.

Case-reports

Case 1.—A Civil Servant, aged 35, had experienced occasional bouts of loss of consciousness since September, 1953, in which he became pale, had twitching movements of his limbs and face, and fell to the ground. He had a premonitory sensation of precordial constriction. Consciousness would return after ten seconds, and this was marked by flushing of his face and sweating. He had had ankylosing spondylitis since 1940. He had no history of rheumatic fever. On March 29, 1954, the attacks began to occur every fifteen minutes, and next day he was admitted to the Maida Vale Hospital for Nervous Diseases, where Stokes-Adams attacks were diagnosed. Ephedrine had no effect on the frequency of his seizures, but on March 31 treatment with subcutaneous 1/1000 adrenaline 0·3 ml. two-hourly was begun, and he improved. When intramuscular adrenaline in oil 0·5 ml. six-hourly was substituted, although he remained well initially, his pulse-rate fell and became irregular, and the attacks recurred. On April 2, 1954, he was again given subcutaneous 1/1000 adrenaline, and the attacks ceased. He had one further attack on the morning of May 3, 1954, when he was transferred to St. Mary's Hospital.

On examination his blood-pressure was 100/40 mm. Hg and pulse-rate 46. His heart was not enlarged. The first heart sound varied in intensity. Electrocardiography showed complete heart-block with right bundle-branch block.

Treatment and progress.—Ephedrine gr. $^1/_2$ t.d.s. was given, the dose being gradually increased to gr. $^1/_2$ four-hourly by May 11. Subcutaneous 1/1000 adrenaline 0·5 ml. was added when his pulse-rate fell below 50 for as long as fifteen minutes. This was given three times on April 24, although he had no attacks from the time of his admission until May 12, when he lost consciousness for a few seconds only. He was feeling quite well again by May 13, but on May 14 he had two typical attacks with convulsions, and complete heart-block was again present; but during the preceding six weeks serial electrocardiograms had shown partial heart-block and, on two occasions, auricular flutter.

Corticotrophin therapy.—Treatment with corticotrophin gel 40 units b.d. was now begun, and after this there was no further attack. The electrocardiogram returned to normal sinus rhythm after a short period of auricular fibrillation. Ephedrine was discontinued and the corticotrophin gradually reduced. On July 16, 1954, the patient was discharged symptom-free and in sinus rhythm on a maintenance dose of corticotrophin 15 units b.d., which was finally discontinued on April 1, 1955.

Follow-up.—Although he remained free from symptoms, electrocardiography on May 26, 1955, showed a lengthened P-R interval and recurrence of right bundle-branch block. Treatment with cortisone 100 mg. daily was therefore started, but the electrocardiogram has not changed since that date. The patient has been back at work since August, 1955. Cortisone was finally discontinued on Oct. 25, 1956, with no ill effect.

Case 2.—A plumber, aged 45, had had rheumatic fever in 1931 at the age of 20. He had his first attack of loss of consciousness in 1936 and three further attacks in June, 1954. The attacks were preceded by a warm feeling, which spread from his epigastrium over the front of his chest to his neck and head. He became unconscious after a few seconds and recovered in about a minute. He noticed that his heart-beat was slow and forceful after an attack, and that he had sweated profusely. He was seen at a hospital, told he had epilepsy, and given diphenylhydantoin sodium and phenobarbitone. He was then free from attacks until Jan. 13, 1956, when they returned with increased frequency, up to forty a day, often brought on by slight exertion. It was now noticed that his pulse disappeared during the attacks. He was transferred to St. Mary's Hospital on April 26, 1956.

On examination his apex-beat was six inches from the midline in the fifth space; a systolic thrill was felt at the aortic area, and a harsh systolic murmur was maximal here but conducted to the neck and apex; a diastolic murmur was conducted from the aortic area down both sides of the sternum. His blood-pressure was 140/70 mm. Hg. There was no evidence of heart-failure. Electrocardiography showed sinus tachycardia, a P-R interval of 0·2 sec., and left axis-deviation. From April 28 until May 29, 1956, the number of attacks varied from one to forty-two a day; they were typical Stokes-Adams attacks in which the pulse and heart sounds were usually absent for about 25 seconds. Electrocardiography showed that, at the start of an attack, the ventricular complexes ceased abruptly without any prolongation of the P-R interval. The attack ended with the establishment of idioventricular rhythm in the presence of complete heart-block, which was followed by partial heart-block and the re-establishment of sinus rhythm.

Treatment and progress.—The number of attacks was apparently uninfluenced by adrenaline in oil 1 ml. b.d., ephedrine gr. 1 q.d.s., methantheline 15–30 mg. t.d.s., and atropine gr. $^1/_{100}$ t.d.s. From May 31 to June 7 there was no attack, stable complete heart-block having developed. After a return to sinus rhythm on June 7 the attacks recurred and continued despite atropine gr. $^1/_{60}$ t.d.s. and digitalis folia gr. $^1/_2$ t.d.s.

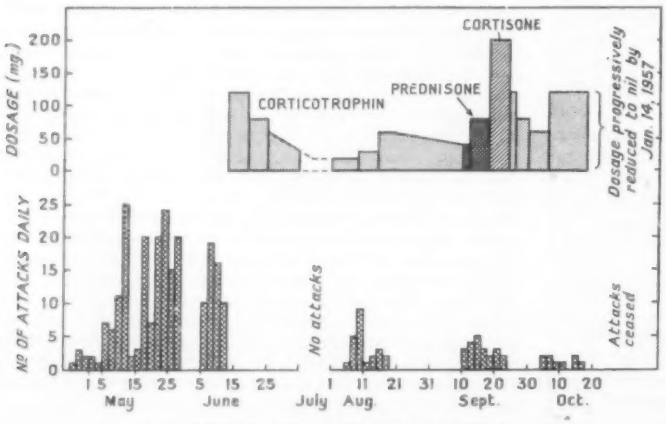
Corticotrophin therapy was started on June 13, 1956, in a dosage of 30 units six-hourly, and the attacks ceased on that day. The patient's response and subsequent progress are shown in the accompanying figure, which shows that the attacks recurred when attempts were made to reduce the dosage of corticotrophin, and that prednisone 60 mg. daily and cortisone 200 mg. daily did not control them. The development of heart-failure on Oct. 18, 1956, necessitated a reduction in dosage of corticotrophin until it was discontinued on Jan. 11, 1957. Complete heart-block had developed on Nov. 3 and continued until the patient was last seen in February. No further attacks occurred until Feb. 26, 1957, when he died suddenly.

Necropsy findings (Prof. D. M. Pryce).—The heart was enlarged, weighing 660 g., with healthy coronary arteries and valves except the aortic, which was narrowed and calcified and from which a calcified "buttress" extended into the ventricular muscle on the left side of the septum, near the bifurcation of the bundle of His. Sections showed acute and chronic inflammation around the "buttress", which appeared to cross the bundle and its left branch. The atrioventricular node was not involved.

Case 3.—A housewife, aged 35, was admitted to Ashford Hospital on Sept. 20, 1956, complaining that in the preceding six weeks she had had at least ten attacks of faintness lasting several minutes. She had noticed that lying down flat usually relieved the faintness, but on three occasions she had lost consciousness completely. A week before admission sore throat with tender neck glands had developed. There was a past history of growing pains and quinsies in childhood. Her brother was said to have valvular disease of the heart.

On examination she appeared intelligent and well but anxious. Her throat was injected, and she had a subsiding herpes-simplex rash on her lips. Her temperature was normal and her pulse basically regular, pulse-rate 80, but with frequent runs of irregular beats. No other clinical abnormality was found. Her blood-pressure during regular rhythm was 140/70 mm. Hg. Electrocardiography showed an auricular rate of 80 with a variable degree of auriculo-ventricular block and some dropped ventricular complexes; there was also right bundle-branch block. The erythrocyte-sedimentation rate (E.S.R.) was 17 mm. in the first hour (Wintrobe), throat swabs were negative, and the antistreptolysin titre was less than 200 units per ml. The level of uric acid in the blood was 3 mg. per 100 ml., and blood Wassermann and Kahn reactions were negative. Cardioscopy showed nothing abnormal.

Treatment and progress.—During the first six days in hospital the patient had five attacks of faintness and nausea, and the



Corticotrophin therapy and progress in case 2.

irregularity of her pulse persisted. On Sept. 27 she had a long severe attack during which she was pale, cyanosed, and cold, sweated profusely, and had Cheyne-Stokes respiration. The auricular rate was 100 a minute, and the ventricular beats were irregular at 10–18 a minute, occasionally coupled. This attack did not respond to atropine, oral ephedrine, and isopropyl-noradrenaline, but after five and a half hours it was stopped by intramuscular ephedrine gr. $1^1/_2$. During the next three days the patient was given oral ephedrine gr. 1 and phenobarbitone gr. $^1/_2$ eight-hourly and was well but for occasional palpitations and one brief syncopal attack. Electrocardiography, however, confirmed the persistent presence of 2 : 1 heart-block, a P-R interval of 0·28 sec., and right bundle-branch block.

Corticotrophin therapy.—On Oct. 2, 1956, the patient had another long attack, similar to that of Sept. 27 but with frequent periods of ventricular asystole accompanied by loss of consciousness and twitching. On this occasion there was no response to intramuscular ephedrine. She was therefore given intramuscular crystalline corticotrophin 40 units at 1.45 P.M. At 6 P.M. her pulse-rate began to rise, the irregularities diminished, and her condition quickly improved. By 8 P.M. 2 : 1 heart block was re-established, the ventricles beating regularly at 45 per minute. The patient was now given corticotrophin gel 30 units twice daily, with a low-sodium diet and supplementary potassium, and from this time onwards she was symptom-free. On Oct. 3 the P-R interval was normal (0·2 sec.) for the first time since her admission thirteen days previously. By Oct. 4, 2 : 1 heart-block was abolished, and tracings made between Oct. 6 and Oct. 12 showed the gradual elimination of right bundle-branch block. Sinus bradycardia (50 a minute) persisted until Oct. 19, seventeen days after the start of corticotrophin treatment. The dose had by then been reduced to 10 units daily, and corticotrophin was finally discontinued on Oct. 20. She remained well, with a normal pulse-rate, heart signs, and electrocardiogram until her discharge on Nov. 3, 1956.

Follow-up.—She had had no recurrence of symptoms when she last visited the hospital, on July 15, 1957, though right bundle-branch block had returned for a short period and the E.S.R. had remained raised.

Discussion

Even in the untreated patient, the frequency and severity of Stokes-Adams attacks may change unpredictably, and spontaneous remissions are known to occur. The success of any treatment is therefore difficult to establish. Nevertheless it is unlikely that the improvement which followed corticotrophin therapy was due to chance in any of these cases:

In case 1 an unstable cardiac rhythm of at least six weeks' standing was converted to a stable rhythm within six days of the first injection.

In case 2 attacks which had occurred with a frequency of one to forty a day for many weeks stopped within a few hours of the first injection, and recurred twice when the dose was reduced.

The attacks of syncope in case 3 were far less numerous but had been occurring for eight weeks, and electrocardiography during the last twelve days had consistently shown grossly abnormal conduction. The attacks ceased within six hours of the first injection and the electrocardiogram rapidly returned to normal.

To these may be added a case published by Prinzmetal and Kennamer (1954):

Their patient, a man aged 60, had had numerous attacks of ventricular asystole for a week, following a posterior cardiac infarction. Sinus rhythm was restored a few hours after a single injection of corticotrophin 40 mg., and a recurrence of heart-block a few days later was again abolished by treatment with corticotrophin. After a ten-day course no further recurrence took place.

A very similar case has been reported by Phelps and Lindsay (1957), who used cortisone instead of corticotrophin.

When the cause of a disorder is unknown, any discussion of the mechanism by which a method of treatment may influence that disorder must of necessity be speculative. Corticotrophin was used in our three patients because it seemed possible that their heart-block was due to inflammation of the bundle of His:

Case 1 had ankylosing spondylitis, a disease in which carditis is known to occur (Bernstein and Broch 1949).

In case 2 the presence of aortic stenosis of rheumatic origin suggested that the bundle might be damaged by a rheumatic lesion.

The origin of case 3's heart-block was more obscure, but her malaise, herpes simplex, and raised E.S.R. all pointed to infection as an underlying cause.

In Prinzmetal and Kennamer's (1954) case corticotrophin was used in the belief that the inflammation at the periphery of an infarct might be interfering with normal conduction.

The opportunity to confirm the diagnosis of inflammation arose only in case 2, where a cellular reaction with secondary calcification was found extending across the bundle from the diseased aortic valve. This reaction could well have been inhibited by corticotrophin; but, if this is what happened, it is surprising that neither cortisone 200 mg. daily nor prednisone 60 mg. daily eliminated the heart-block. Possibly these doses were not large enough. Opportunities to make similar comparisons between the effects of corticotrophin and adrenal steroids in cases 1 and 3 have not arisen.

The improvement observed in our patients may have been due not to the suppression of inflammation but to an alteration in the metabolism of the heart-muscle which was favourable to conduction and contraction. Such alterations have been postulated in Cushing's syndrome (Lown et al. 1955) and during therapy with corticotrophin and with cortisone (Medical Research Council and American Heart Association 1955).

Hajdu and Szent-Györgyi (1952) have shown that, in the isolated frog's heart, deoxycortone can influence contraction and the state of the muscle between contractions, probably by a modification of ionic transport across the cell membrane, but it is difficult to draw inferences about human heart-block from the results of their experiments.

The only direct evidence that heart-block may be influenced by metabolic changes is the observation that it can sometimes be abolished by infusions of molar sodium lactate (Bellet et al. 1955, 1956, Swash and Wallace 1956).

In the treatment of refractory cases of Stokes-Adams attacks the choice between corticotrophin therapy and infusions of molar sodium lactate may be difficult. Lactate infusions probably act more quickly, which could be a decisive advantage in some cases. On the other hand, corticotrophin therapy avoids the need for an intravenous infusion and the considerable risks associated with the production of an acute rise in plasma pH. Only further experience with both methods can determine their relative efficacy and safety. The effects of the various adrenal steroids on Stokes-Adams attacks also merit further study.

Summary

Three patients with severe Stokes-Adams attacks improved strikingly within a few hours of the start of corticotrophin injections. They had all failed to respond to atropine and adrenergic drugs.

We are grateful to Dr. K. D. Keele for permission to publish case 3.

References overleaf

PINK DISEASE AFTER APPLICATION OF MERCURY OINTMENT

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SINCE Warkany and Hubbard (1948) first described the high content of mercury in the urine of many children with pink disease, there has been much speculation about its exact importance in the pathogenesis of the condition.

I report here the simultaneous development of pink disease in siblings who had been exposed, for a short period before the disease began, to identical sources of mercury.

Case-reports

Case 1.—A girl, aged 3 years and 1 month, was the first child of healthy parents. She had never been given teething-powders or any medicine other than magnesia. Early in December, 1955, she became irritable and, during the next three weeks, gradually lost her appetite and began to have screaming attacks during the night. She lost about 5 lb. in weight during this period. At the beginning of January, 1956, her fretfulness increased, and she developed incontinence of urine and fæces. Her hands and feet were extremely pink. She was admitted to hospital on Jan. 13, 1956.

On examination she was thin and fretful, with no photophobia. Her hands and feet were red, and one hand was peeling. She had a follicular papular rash on her trunk. Her pulse-rate was 122, blood-pressure 145/90 mm. Hg, and heart normal. There was no sign of infection in her throat, ears, chest, or urine. Her inguinal glands were slightly enlarged. Tendon-reflexes were all brisk and equal on both sides.

Investigations.—Examination of the blood showed Hb 104% (15·4 g. per 100 ml.), and white cells 6200 per c.mm., neutrophil polymorphs 57% (3534 per c.mm.), lymphocytes 42% (2604 per c.mm.), monocytes 1% (62 per c.mm.). The serum-sodium level was 288 mg. per 100 ml. (125 mEq. per litre), potassium 19·5 mg. per 100 ml. (5 mEq. per litre), chloride 515 mg. per 100 ml. (88 mEq. per litre). Radiographs of long bones, epiphyses, and abdomen were normal. The urine contained a trace of albumin but no cells or casts; the pH was 6·0. 160 ml. of urine passed in twenty-four hours contained 112 μg. of mercury.

The patient was discharged home on Jan. 21, 1956, and subsequently made a complete recovery.

Case 2.—A baby, aged 13 months, brother of case 1, had never been given teething-powders or any medicine other than magnesia. Early in December, 1955, he became fretful, and this was attributed to teething. Three weeks later his fretfulness increased, and he became limp and unable to sit up. He also started to pull out his hair. He developed a rash with pink hands and feet a week later than his sister. His feeding and sleeping habits were not altered. He was admitted to hospital with his sister on Jan. 13, 1956.

On examination he was well nourished but fretful, with no photophobia. He was continually pulling at his hair. He was sweating profusely, although his skin was cold. His hands and feet were red and cold and covered with a maculopapular rash. Apart from a napkin rash, the rest of his skin was clear. His pulse-rate was 148 and blood-pressure 135/80 mm. Hg. His heart was normal. There was no sign of infection in his throat, ears, chest, or urine, but his axillary and inguinal glands were slightly enlarged on both sides. His tendon-reflexes were all present but diminished, and he had general hypotonia.

Investigations.—Examination of his blood showed Hb 92% (13·6 g. per 100 ml.), white cells 10,800 per c.mm., neutrophil polymorphs 78% (8424 per c.mm.), lymphocytes 16% (1728 per c.mm.), monocytes 6% (648 per c.mm.). Serum-chloride level 547 mg. per 100 ml. (93 mEq. per litre). Radiographs of long bones, epiphyses, and abdomen were normal. 82 ml. of urine passed in twenty-four hours contained 246 μg. of mercury.

The patient was discharged home on Jan. 21, 1956, and has since made a complete recovery.

Discussion

It was clear, from the urines of these two children that they had been exposed to a copious source of mercury. For a long time all attempts to trace this source were fruitless, but finally, through the efforts of Mr. M. P. Morel, the children's family doctor, the mystery was solved. On repeated questioning the mother had always denied that any ointments had been applied to her children, but many months later she remembered that, in mid-October, 1955, another doctor had supplied an ointment, subsequently identified as ung. hyd. ammon. *B.P.*, to be rubbed inside the anal margin and on the perianal region of the younger child each night as treatment for a possible threadworm infection. This treatment had been continued up to the time of the child's admission to hospital. The elder sister was extremely jealous of her brother and had insisted that she should have similar applications. These had been given with equal thoroughness.

Extensive inquiries did not reveal any other source of mercury to which the children might have been exposed.

Pressure of medical opinion has led to the virtual disappearance of mercury-containing teething-powders; but children may still absorb dangerous quantities of mercury exhibited in other forms. The prescription of any preparation containing mercury for children in the susceptible age-group should be avoided when effective alternative treatment exists.

My thanks are due to Dr. F. S. W. Brimblecombe, under whose care these patients were admitted to hospital; Mr. M. P. Morel, F.R.C.S., for referring the patients and for solving the mystery of the source of the mercury; and Miss Margaret M. McCready, B.SC., for estimating the mercury in the urine.

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SPONTANEOUS RUPTURE OF THE ŒSOPHAGUS AND BRONCHIAL ASTHMA

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SPONTANEOUS rupture of the œsophagus, although rare, is being increasingly recognised during life. I report here two cases of spontaneous rupture of the œsophagus presenting with bronchial asthma within six months in a general medical unit. This combination does not appear to have been reported previously.

Case-reports

Case 1.—A man, aged 32, an engineer by trade, was admitted to Saint Catherine's Hospital late on the night of April 25, 1957. He had had asthma since the age of 10 years. He served with the R.A.F. in the late war, both at home and abroad. During this time he had little chest trouble, but since demobilisation in 1945 he had lived at home with his mother for twelve years in constant need of his isoprenaline spray.

He was rehabilitated in engineering in 1956 and took a job locally at which he was happy, and he was not troubled with asthma. At Easter, 1957, he had noticed ankle swelling, which subsided with rest. A few days before admission he had felt more tired than usual, but he remained at work. Twelve hours before admission he started with an attack of asthma, and his condition deteriorated rapidly despite the use of bronchodilating drugs. He became very dyspnœic and cyanosed. He complained of no pain in his chest, had no nausea, and did not vomit. Cough, which was minimal, produced mucoid sputum flecked with blood. An hour before admission he became stuporose.

On admission he was very distressed by dyspnœa. He was a big heavy man and sat propped up in bed using his accessory muscles of respiration and perspiring freely. Pulse-rate 120 and temperature 102°F. Expiratory rhonchi were heard throughout both sides of his chest and crepitations at both bases. There was no subcutaneous emphysema of his chest wall. His blood-pressure was 120/80 mm. Hg. His abdomen was soft and not tender.

Treatment and course.—He was given intravenous aminophylline and intramuscular phenobarbitone sodium, and a four-hourly course of intramuscular penicillin and streptomycin was started. No improvement took place in the next two hours, by which time his temperature had risen to 103·4°F. His respirations became very rapid and shallow, with definite bronchospasm; cyanosis developed; and he appeared more collapsed. Oxygen and further intravenous aminophylline were administered, and intramuscular cortisone was given but without any observable effect. His condition deteriorated and he died at 8 A.M. the following morning.

Necropsy revealed bloodstained turbid stomach contents in the left pleural cavity; acute inflammation on the pleural surface of the left lower lobe; emphysema of both lungs; sticky mucus in the bronchi; stomach contents in the œsophagus and pharynx; and a linear tear 1 inch long in the lower end of the œsophagus on the left side, through which the stomach contents were leaking into the left pleural cavity. There was also a large tear in the cardiac end of the stomach, and stomach contents had escaped into the peritoneal cavity. There was no evidence of ulceration of either the œsophagus or the stomach. No other abnormalities were found.

Case 2.—A spinster, aged 45, was admitted to Saint Catherine's Hospital late on the evening of Oct. 22, 1957. Apart from an operation on her nasal sinuses for " catarrh " the year before, she had had no illness in her life. Three and a half weeks previously she had consulted her general practitioner, who thought she was starting with influenza, and advised her to go to bed. Cough and wheeziness developed, which were not relieved by cough medicines. She was off her food and remained in bed. Concern was felt about her condition, and after a week a physician was called in consultation. He noted intense generalised expiratory bronchospasm on auscultation. Bronchial asthma was diagnosed, and tab. 'Franol' and 'Iso-bronchisan' together with an expectorant mixture were prescribed. For the next ten days the patient remained much the same, but she got out of bed for a while each day. She slept badly, and during the night she was much troubled with coughing. Two days before admission her dyspnœa got worse. She had no pain in her chest and at no time vomited.

On admission she appeared well built and sat up in bed using her accessory muscles of respiration. She was dyspnœic, tachypnœic, and slightly cyanosed. Examination of her chest revealed expiratory bronchospasm throughout both sides. Her temperature was normal, her pulse-rate 100, and her blood-pressure 145/80 mm. Hg. She had no subcutaneous emphysema of her chest wall, and nothing else abnormal was noted on clinical examination.

Treatment and course.—She was given intravenous aminophylline, and a course of parenteral penicillin four-hourly was started. Intramuscular phenobarbitone sodium was given, and later tetracycline therapy was started. She became weaker and died at 9.30 A.M. the following morning.

Necropsy revealed very sticky mucopus in the trachea and bronchi. The left pleural cavity contained bloodstained stomach contents. The lungs showed a sticky purulent bronchitis. There was a linear tear of the œsophagus 2 inches long immediately above the diaphragm on the left side. There was no ulceration of the œsophagus or of the stomach. No other abnormalities were found.

Discussion

Boerhaave first recognised spontaneous rupture of the œsophagus pathologically in 1724. Many reviews of this subject have been published in the last few years (Barrett, 1946, Ware et al. 1952, Moynihan 1954, Anderson 1957) and more than two hundred cases have been reported. In no case has rupture of the lower end of the œsophagus been described in association with bronchial asthma.

The presenting symptoms are, in most cases, sudden onset of substernal, epigastric, or abdominal pain usually preceded or accompanied by vomiting. Dyspnœa, shock, and cyanosis develop later, the dyspnœa resulting from the pain or from the development of a pneumothorax or a hydrothorax. The earliest sign is said to be subcutaneous emphysema (Chamberlain and Byerly 1957) and has been reported in many cases. Abdominal rigidity and tenderness occur, and signs of pneumothorax, hydrothorax, or pyopneumothorax develop later. Bronchospasm has not been reported.

The outstanding feature of the two present cases was the complete absence of pain and vomiting (in both cases details of the illness were checked with the relations after the necropsies). In case 1 there was a long history of bronchial asthma. In case 2 severe bronchospasm was associated with bronchitis following influenza in an otherwise healthy woman.

The ætiology of true spontaneous rupture of the œsophagus is unknown. Many of the so-called " spontaneous ruptures " of the lower end are either postemetic or secondary to œsophagitis and ulceration which may have been symptomless. A sudden increase in intra-abdominal pressure appears to be the precipitating factor in all cases and is the common denominator in rupture of the lower end of the œsophagus in pregnancy or labour, or associated with defæcation, strenuous exercise or epilepsy, severe vomiting, intracranial disease, or peritoneal irritation. Cough is seldom associated with rupture of the œsophagus (Anderson 1957).

It seems likely that in both these cases, rupture of the œsophagus was secondary to raised intraluminal œsophageal pressure associated with severe wheezing and coughing. From the two histories bronchospasm was unlikely to have been the presenting feature of the spontaneous rupture. Published discussions of the differential diagnosis of spontaneous rupture do not include bronchial asthma.

It is perhaps too much to suggest that spontaneous rupture of the œsophagus should be considered in a patient with bronchial asthma who has not responded to bronchodilating drugs. There should be no delay, however, in such a situation in X-raying the patient's chest if the underlying lesion is to be detected. Physical signs are obscured by the loudness of the expiratory wheeze. The earliest sign of spontaneous rupture of the œsophagus on radiography is loss of translucency behind the heart, due to air escaping into the mediastinal tissues. Today, when timely surgical intervention combined with

antibiotic therapy can be lifesaving, it seems important not to miss this condition.

I wish to thank Dr. A. Grunberg, under whose care these patients were admitted, for permission to publish, and Miss R. Rawcliffe who performed the necropsies.

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TETANUS

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THE successful treatment of a very severe case of tetanus with antitoxin and relaxing agents and by intermittent positive-pressure respiration in the presence of many complications is reported here.

Honey et al. (1954) were the first to report the treatment of established tetanus with tubocurarine and intermittent positive-pressure respiration, and were followed by Lassen et al. (1954, 1956), Shackleton (1954), Smith et al. (1956), and Ramsay et al. (1956). The historical and therapeutic background of this treatment has been well covered by them and by Ablett (1956).

Knott and Cole (1952) defined six clinical types of tetanus and suggested that the severity of the disease tends to be inversely proportional to the length of the incubation period. In the case reported here it was impossible to fix the incubation period, because the patient had two operations and a preoperative cut-down blood-transfusion, at any of which the infection may have taken place. No swab taken from any wound on this patient at any time showed evidence of *Clostridium tetani*. The incubation period may have been as short as eight days.

Knott and Cole, however, further state that a more valuable measurement in assessing prognosis is the interval between the first symptom (usually trismus) and the first generalised reflex spasm; this may be termed " the period of onset ". Usually, the longer the incubation period the longer is the period of onset; but, if there is any discrepancy, the period of onset gives a better indication of the probable severity of the tetanus. As a guide to prognosis they suggest the following rule: if the incubation period is more than seven days and the period of onset more than two days in an otherwise healthy patient, the chance of recovery is good. On the other hand, with figures less than these the prognosis becomes rapidly worse.

Case-report

A not very robust woman, aged 43, had bronchiectasis in her left lower and lingular lobes and her right middle lobe. On Jan. 25, 1957, she underwent a dental clearance and on Feb. 4, 1957, a left basal and lingular lobectomy. Her convalescence was initially uneventful, though she ran a low-grade pyrexia from the third day and had been coughing up a good deal of bloodstained sputum. Seven days after the operation, in the evening of Feb. 11, she had backache and dysphagia. By 6 A.M. on Feb. 12 she had hypertonicity of the muscles of her neck and upper abdomen, and by 9 A.M. tetanus was diagnosed. At 1 P.M. her rigidity had increased, and soon afterwards she had the first of two " cyanotic attacks ", probably due to difficulty in swallowing saliva and pharyngeal secretions. She therefore underwent tracheotomy under general anæsthesia with thiopentone, succinylcholine, and endotracheal gas-oxygen by controlled respiration. A short right-angled cuffed tube mounted on a Magill suction T-piece was inserted into the trachea, and an œsophageal tube was passed into the stomach. The thoracotomy, intravenous-drip, and drainage-tube wounds were explored and debrided.

Day 1 (Feb. 12)

The patient was given antitetanic serum 5000 units intramuscularly and 100,000 units intravenously and penicillin 1,000,000 units intramuscularly. After the tracheotomy the patient quickly recovered consciousness, and sedation with intramuscular sodium phenobarbitone gr. 3 six-hourly was started. She also received small doses of pethidine intravenously from time to time. From this time onwards, for thirteen days, she was kept continuously relaxed with tubocurarine and her lungs were ventilated by intermittent positive-pressure respiration. Feeding through the œsophageal tube was begun with 3½ oz. of ' Complan ' in 15 fl. oz. of water two-hourly. Initially, respiration was effected by manual bag-squeezing through a Waters soda-lime canister, but later that evening the patient was connected to a Mortimer respirator. She was ventilated with a mixture of 5 litres of air and 2 litres of oxygen.

Day 4

Tubocurarine was continued in a dosage of slightly less than 10 mg. hourly. The patient's temperature rose to over 101°F. Catheterisation initiated a bout of twitching. During the removal of the endotracheal tube for cleansing, a bronchoscope was passed. Little or no sputum was aspirated, but the endoscopy provoked generalised muscle twitchings. During the night the patient was ventilated by continuous manual bag-squeezing, and apart from short periods the respirator was abandoned because its use seemed to be associated with an immediate accumulation of carbon dioxide.

Day 5

Radiography showed that the patient's left upper lobe had partly collapsed; therefore vigorous two-hourly physiotherapy was directed to it, and the patient continued to be turned hourly from one side to the other.

Day 6

The patient's temperature rose to 103°F. Her right dorsal lobe appeared to be collapsed; so she was turned on to her face for about ten minutes for physiotherapy to this lobe aided by intratracheal suction. Alarming distension of her abdomen appeared; so ' Sennokot ' was given through the œsophageal tube to initiate a bowel movement.

Day 8

A Radcliffe pump lent to the hospital proved, with its ready adaptability to various respiratory rates and pressures, an enormous relief to the anæsthetic staff and apparently to the patient, who settled down well on this respirator. Routine radiography showed an empyema in the left side of the chest. Under local analgesia an intercostal catheter was inserted and connected to an underwater seal, and air blowing from the catheter confirmed the presence of a bronchopleural fistula. Clinical examination suggested that the right lower lobe was collapsed; so, while the endotracheal tube was removed for cleansing, the vocal cords were sprayed with lignocaine 4%, and the patient was bronchoscoped. This procedure made her cyanosed, and she required pure oxygen for half an hour afterwards until her pulse-rate settled down again. During the evening her pulse-rate suddenly increased to 180 and an electrocardiogram showed auricular tachycardia. Aminophyllin 0·48 g. was given intravenously to relieve bronchospasm. Acute paralytic ileus developed. The distension of the bowel pushed the liver up against the flaccid right diaphragm and aggravated the collapse in the right lower lobe. Much " coffee-grounds " fluid was aspirated through the œsophageal tube. The patient was deeply unconscious, her hands became cyanosed, and her systolic bloodpressure fell to 50 mm. Hg,

indicating peripheral circulatory failure. Her temperature rose to 104°F.

Day 9

In the early hours the patient was apparently moribund; but a noradrenaline drip 4 mg. per 500 ml. of physiological saline solution was started at 60 drops a minute, and in the next twelve hours the patient improved dramatically. 2 pints of blood was given. Her temperature reached its peak of 106°F by the early morning, and cooling with wet sheets and electric fans was started.

Day 10

The noradrenaline drip was discontinued after twenty-four hours, during which she had had 44 mg. of the drug. The dosage of relaxant during this period of severe illness was the lowest so far required in a day. The paralytic ileus cleared up, and there was a general improvement in her lungs.

Day 11

She began taking very small quantities of fluids by mouth. Owing to her exhausted condition she required only 70 mg. of tubocurarine in the twenty-four hours.

Day 12

Her improvement was maintained. Vigorous physiotherapy to her chest was continued. She showed signs of resisting the action of the Radcliffe pump; so, when the last dose of tubarine was wearing off, she was taken off the respirator for one to two minutes and encouraged to respire unaided. She cooperated well in this; so we withdrew the relaxant; but after four hours without tubocurarine she had a major tetanic spasm.

Day 13

Abdominal distension recurred, but gastric suction and intravenous dextrose and saline solution prevented ileus. With the onset of distension the patient's right lower lobe collapsed again. Her temperature rose to 102°F.

Day 14

She received her last regular dose of tubocurarine. After a second test withdrawal of relaxant there was no convulsion. By the evening she could, with difficulty, open her eyes. At this stage she still had hypertonicity and pain in the neck and intercostal muscles, and to overcome this she was given mephenesin 0·5 g. two-hourly by mouth.

Day 16

She breathed spontaneously for four hours. The mephenesin was reduced to 0·25 g. three-hourly; but neck rigidity was still severe, and the onset of increasing difficulty in inflating the chest caused us to revert to two-hourly dosage again, with good result. Attempts to re-educate the swallowing reflex were made, but head retraction, neck rigidity, and the œsophageal tube hindered progress. Attempts at swallowing caused saliva to appear in the tracheotomy wound.

Day 17

A sudden increase in sputum necessitated bronchoscopy. Since the patient's hæmoglobin was only 71%, she was given a transfusion of 2 pints of blood. She was rather more restless and uncooperative, and we feared lest her cerebral cortex had suffered in the early cyanotic attacks, and we wondered whether we had been labouring so hard merely to keep alive a decerebrate.

Day 18

The patient still required machine ventilation at times, as and when her own spontaneous respiration became rapid and inadequate.

Day 19

She was still producing large amounts of sputum and was easily exhausted and worried by prolonged periods off the Radcliffe pump. She would pass readily into tranquil sleep immediately after the start of artificial ventilation. She was not easily roused to cooperation, and since she had had gr. 197 of intramuscular phenobarbitone in twenty days the daily dose of this drug was immediately halved.

Day 20

Lobar and segmental collapse still occurred rapidly and frequently. The two-hourly regime of turning and physiotherapy was maintained. The patient's spontaneous respiration was 40–44 a minute. The œsophageal tube was removed after several successful attempts to swallow with the tube in place.

Day 21

When the patient was breathing spontaneously through her tracheotomy, lack of humidification of inspired air seriously added to her difficulty in expectorating. A Walley humidifier (Walley 1956) satisfactorily overcame this difficulty in a few hours. This was the sixth day following the withdrawal of tubocurarine; and, though her tetanus was clearly cured, we were anxious at her continued drowsiness. The appearance of athetotic movements aggravated our suspicions that she had had cerebral hypoxia. Her appearance at this time is shown in the illustration, with the Walley humidifier in use. All sedatives were discontinued this day. The removal of the œsophageal tube seemed to have been premature, because further attempts at swallowing were not so successful as at first. A sound sleep was ensured by putting the patient back on the Radcliffe pump for the night.

Patient on 21st day wearing Walley humidifier.

Day 22

The patient coughed more strongly now and produced sputum unaided.

Day 23

She was still not swallowing sufficient fluids to maintain hydration and was therefore given two pints of N/5 dextrose and saline solution intravenously. Her lungs were very much drier, aerating well at all areas. Her mental state had also much improved. She showed animated enjoyment of a radio programme which she heard through earphones. She asked by signs for tea and successfully swallowed semi-solids.

Day 25

She regained control of her bowels.

Day 26

She recognised all the relations who visited her. She slept throughout the night without the Radcliffe pump, which was not used again. One of our difficulties at this stage was to determine when the swallowing reflex had recovered sufficiently to enable us safely to substitute for the cuffed tracheotomy tube a plain silver tube. The cuffed tube seemed to accentuate the dysphagia, but the presence of food debris on top of the cuff appeared to us to be a definite contraindication to removal of the tube.

Day 27

When the cuffed tracheotomy tube was temporarily removed on day 27 and the tracheostomy was occluded, the patient was able to phonate, repeating her name again and again. She later confessed that her great pleasure at this achievement was because she thought she was never going to speak again.

Day 28

She had partly regained control of micturition.

Day 36

The tracheotomy tube was finally removed and the tracheotomy sinus allowed to close by granulation.

Day 41

Skin was grafted on to her right foot under general anæsthesia because she had sustained a hot-water-bottle burn in the early days of her illness.

May 22

The patient was discharged, having made a complete physical and mental recovery.

Discussion

Prognosis

Based on the criteria of Knott and Cole (1952) prognosis seemed very poor. The fulminating onset, the residual bronchiectasis, and the recent resection of lung were complicating factors. Later she had an empyema and a bronchopleural fistula. At one time or other almost every pulmonary segment collapsed. A regime of antibiotics, three-hourly (and sometimes two-hourly) physiotherapy, postural drainage, bronchoscopy, and regular intratracheal suction prevented permanent atelectasis.

Alimentary

Nutrition and hydration were maintained principally with complan $3^1/_2$ oz. in 15 fluid oz. of water three-hourly. This volume was modified from time to time in the light of the patient's general condition.

Relaxants

Tubocurarine was chosen as the relaxant because of its lack of side-effects, its length of action, its ease of administration, and its successful use in previously published cases. Relaxation was carried to a point where the respiratory muscles were sufficiently atonic to permit the efficient exchange of gas by mechanical ventilation of the lungs. The patient could often flex her wrists in spite of otherwise adequate curarisation, and we used this movement during her more lucid moments as a signal whereby she was able to respond to questions, using one wrist movement to answer " yes ", and the other " no ".

Major tetanic convulsions were suppressed by curarisation, and none occurred from the onset until the twelfth day, when she was permitted to emerge from paralysis as a test of cure. Generalised twitchings occurred when carbon dioxide accumulated, but these could be corrected, and it was not thought necessary to abolish them entirely. Tubocurarine was given at all times through a Mitchell intravenous needle. During the difficult transition period between complete relaxation with tubocurarine and the restoration of normal muscle tone, mephenesin was of great value in overcoming the painful hypertonicity of the neck and intercostal muscles.

Respirators

After an initial period of manual ventilation the patient was connected to the Mortimer respirator on the evening of the first day. Within forty-eight hours we had each independently decided that she was uncomfortable on this type of respirator. Carbon dioxide accumulated quickly, but in our inexperience we may have contributed to this by giving inadequate doses of curare to allow the respirator to work effectively. It was clear, however, that a smaller dose of relaxant was satisfactory when either manual ventilation or the Radcliffe pump was in use.

The Radcliffe pump proved entirely reliable and easy to operate and had a conveniently wide range of speeds. In the model lent by the manufacturers the suggested temperature setting of the thermostat in the humidifier produced droplets of water in the polyethylene tubes; so the setting was twice reduced, and finally the humidifier was used only intermittently. Opinions varied on the desirability of using a negative phase in the respiratory cycle, and after a few days' trial it was discontinued, without apparent detriment to the patient.

Inflation pressures varied between 18 and 25 cm. of water. The accumulation of carbon dioxide was indicated clearly and consistently by a sudden sharp rise in blood-pressure from the average of 120/80 mm. Hg to 160/100 mm. Hg or more; within two minutes of this sign the patient would begin to sweat profusely and then to twitch all over. The soda lime was changed when on bag ventilation, or a further dose of tubocurarine allowed the respiratory muscles to relax sufficiently to clear the accumulation.

For ventilation a mixture of air and oxygen was used principally (5 litres of air and 1 litre of oxygen), but at times it became necessary to use pure oxygen. Nitrous oxide was not used at all, because Lassen et al. (1956) reported severe depression of the bone-marrow after its prolonged use.

Medication

Other workers have found chlorpromazine of value in treating milder tetanus. Among its attributes is the freedom from excessive pharyngeal and bronchial secretions, which are common in tetanus. Owing to gross infection in the present case we felt that the danger of liver damage contraindicated its use.

Sedation was achieved initially with intramuscular sodium phenobarbitone gr. 3 six-hourly and pethidine; but as the patient deteriorated she required progressively less sedation.

Blood Chemistry

Estimations varied surprisingly little from the normal figures. There was a tendency towards acidosis, and transient hypokalæmia came on during the gastrointestinal upsets. All the estimations returned to normal after the resumption of spontaneous respiration.

Humidification

During the first seven days, when ventilation was effected either by the Mortimer respirator or by manual bag-squeezing, the soda-lime canister acted as a very efficient humidifier. While the Radcliffe pump was in use, the humidifier incorporated in the machine was used intermittently. Humidification became a problem only when the patient was breathing spontaneously through the tracheotomy tube, and then the crusting of the secretions caused a deterioration in the condition of her lungs, which was rectified by the use of a Walley humidifier.

Summary

Severe postoperative tetanus, complicated by bronchiectasis, empyema, bronchopleural fistula, and peripheral circulatory failure, was successfully treated with antitoxin, antibiotics, muscle relaxants, and intermittent positive-pressure respiration.

The patient's complete recovery involved the full-time attention of anæsthetists for three weeks, and at all times the exceptional skill and enthusiasm of the nurses and physiotherapists.

We wish to thank numerous friends and colleagues for their help and advice, especially Dr. A. Crampton Smith, of the Oxford respiratory unit, and Mr. H. G. East, managing director of East and Co., Oxford, from whom we hired the Radcliffe pump.

References at foot of next column

Preliminary Communication

THE ACTION OF QUINIDINE INTERPRETED FROM INTRACELLULAR POTENTIALS OF SINGLE CARDIAC FIBRES

THE mode of action of quinidine has long presented a puzzling paradox. Lewis, Drury, Iliescu, and Wedd [1] originally claimed that quinidine prolonged the absolute refractory period of the dog's atrium; and, since the drug was also antifibrillatory, they considered that the evidence supported their view that fibrillation involved a circular sequence of excitation. Subsequently Love,[2] using a more precise method of measurement, found that the absolute refractory period was not, after all, prolonged by quinidine, but was sometimes shortened. The absolute refractory period of cardiac muscle is known to be approximately synchronous with the duration of the action potential,[3 4] and the latter also was shown not to be prolonged by quinidine.[5] The problem remained to explain how, when the absolute refractory period (i.e., the shortest interval after a stimulus at which a local response could be elicited by a second stimulus) was unchanged or shortened, quinidine nevertheless reduced the " effective refractory period ", thus lowering the frequency at which propagated impulses could be conducted.

Recently developed techniques now enable more precise information to be obtained about the electrical activity of single cardiac fibres.

Fine capillary pipettes can be drawn with a diameter of less than 0·5 μ at the tip, and, filled with strong KCl solution, can be introduced into single cells to record potentials as efficiently as metal electrodes. When a microelectrode penetrates the membrane of a single atrial fibre, a negative potential of -75 mV is immediately recorded (the resting potential); during activity the potential swings rapidly positive to cross the original baseline and become positive inside the fibre relative to the outside by about $+24$ mV (the " overshoot "). The total rising phase takes about 3·0 msec. at 31°C; hence the average rate of rise is $\frac{75+24}{3\cdot0}=33$ V per sec. The membrance then repolarises more slowly to its original value of -75 mV, reaching the half-way point in about 60 msec.

Simultaneous measurements of contraction, conduction velocity, and intracellular potential have been made in isolated rabbit atria in the presence of a wide range of concentrations of quinidine. The measurement of contractions permitted an independent estimate of toxicity, and it was found that concentrations of quinidine up to 10 mg. per litre did not reduce contraction by more than a quarter, usually by less. This agreed well with the direct measurements of serum-quinidine levels in man by Sokolow and Edgar,[6] who found that, in patients in whom atrial fibrillation was successfuly arrested, 75% of the levels were between 4 and 9 mg. per litre.

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In the present experiments it was found that at concentrations of 10 mg. per litre or less there was no fall in the resting potential, and at much higher concentrations there was a reduction of only 2 or 3 mV. It was concluded, therefore, that the action of quinidine cannot be due to a change in resting potential. Again, at 10 mg. per litre or less, quinidine did not prolong the half-time for repolarisation and sometimes shortened it—which explains the absence of any change in absolute refractory period. The terminal phase of repolarisation was, however, prolonged (see below). In contrast, even at concentrations of 1–5 mg. per litre there was a great reduction in the rate of rise of the action potential and in conduction velocity. The height of the " overshoot " was also diminished.

These observations provide an explanation for the prolongation of the effective refractory period by quinidine in the absence of a change in the absolute refractory period.

It has been established [7 8] that a second propagated action potential cannot be elicited from cardiac muscle until the phase of repolarisation has proceeded to about two-thirds of the full resting potential—i.e., until the membrane has again become negative to about -50 mV in atrial muscle. A local non-propagated response can be obtained a little earlier, when the potential has reached only -42 mV; the absolute refractory period is thus a little shorter than the effective refractory period. In a normal atrium the duration of the terminal phase of repolarisation is consequently of no importance in determining the effective refractory period, because a propagated response can occur when the membrane has been repolarised to only -50 mV.

For a propagated response to occur, a certain minimum rate of rise of the depolarisation phase of the action potential is necessary, to overtake the process of accommodation. If the rate of rise is very slow, no propagated impulse can develop. It has been shown that the rate of rise is a function of the level of the potential of the membrane at which the action potential " takes off ".[7 8] If a stimulus is introduced when the membrane is repolarised to -65 mV, the action potential takes off with a rate of rise much faster than if the stimulus occurs when repolarisation has proceeded only to -55 mV. As already stated, in a normal atrium the critical rate of rise for propagation can occur when the response takes off at about -50 mV. At -45 mV a local response can still occur, but the rate of rise is insufficient for propagation.

In the presence of quinidine the rate of rise itself was greatly reduced. The membrane had therefore to repolarise further before the critical take-off point was reached at which the rate of rise was fast enough for propagation. The duration of the terminal phase of repolarisation, normally unimportant, thus became significant in determining the effective refractory period. The absolute refractory period was unchanged, because the duration of the half-time for repolarisation was not prolonged by quinidine, and a local response could still occur at the normal point. But the rate of rise was so depressed that it was inadequate for propagation until repolarisation had proceeded much further than normal. The effective refractory period could, in fact, exceed the total duration of the action potential in the presence of quinidine. At high concentrations of quinidine the atria became totally inexcitable, although there was no significant fall in resting potential—i.e., the effective refractory period had become infinite, even though repolarisation was complete.

It is concluded that quinidine acts by affecting the phase of depolarisation, without necessarily prolonging the duration of the phase of repolarisation.

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Medical Societies

ROYAL SOCIETY OF MEDICINE

The Physician's Obligation to Society

THE Section of Medicine met on April 22 with Dr. W. A. BOURNE, the president, in the chair.

Looking back on the great demographic transformation which had taken place since 1750, Dr. FFRANGCON ROBERTS described it as a unique event in the history of the human race which could never happen again. To this change from high birth and death rates to low birth and death rates clinical medicine had contributed very little until the beginning of the 1914–18 war. The main factors in this transformation had been the increase in national wealth and productivity that sprang from industrialisation, the ampler food-supplies generated by the agrarian revolution, and the general adoption of birth control. Medicine did come into it, however, by taking part in the philanthropic movement of the 18th century and then in the important public-health measures of the 19th century. Finally the present century had seen the harnessing of medicine to science and the doctor's involvement not only in curative work but also in social medicine. He also found himself bound up in commerce, where advances in medicine, we must admit, largely resided.

Thus, the doctor must now share in activities never dreamt of by his predecessors. How had his obligations to society changed? Basically, not at all. He still had his obligation to the individuals of whom society was composed, and since the end of the 18th century he owed an obligation to society to benefit individuals indirectly by improving social environment. These duties were not so straightforward as they seemed, for doctors must consider the remote consequences of their actions—overpopulation, the ageing of the population, and a change in the balance of the sexes. The conquest of malaria and yellow fever had been a triumph, but medicine could not advance further than food-supply. Medicine was threatening to intensify the operation of the malthusian law and had indeed done so in some places. This was a social and economic question; the doctor could only bring to bear his expert knowledge on contraception when he was asked to do so. The ageing of the population brought a lot of unhappiness with it. Again, the doctor's obligation, in Dr. Ffrangcon Roberts' estimate, was limited to medical action; the social consequences as such were not his concern. By the year 2000 England and Wales would contain 350,000 more marriageable men than women. This was due to the saving of the lives of baby boys who, at birth, numbered 106 to every 100 baby girls. At the other end of the scale lay the much greater capacity of old women to resist mortality; at age 60 and over, women would outnumber men by 2,000,000. Civilisation must therefore face the prospect of a world of compulsory bachelors being looked after by widowed mothers.

The creation of the perfect environment was not the success some people had hoped for. Neuroses in new housing estates and towns were three or four times commoner than in the old situations. People became unhappy despite all efforts to make them happy. Every stage in reducing mortality brought fresh difficulties: we created problems as fast as we solved them.

Dr. E. R. CULLINAN interpreted the discussion's title as " to treat patients "; and what the patient wanted was to be cured with the least delay and discomfort, to get out of hospital quickly, to be told where he stood, and to get back as soon as possible to his usual life. Only the profession could maintain the standard of the care it provided (its employers in the National Health Service could not do so); but to maintain the background he had learned in the teaching hospital the practitioner must be allowed time to do his work properly under good conditions.

One of the most refreshing things in a teaching hospital was the diversity of interest among its staff. One physician might be concerned only with the treatment of the sick, another with the study of disease for its own sake: each must respect the other and they mostly did. Some physicians combined treatment and research, and it was important that they should be clear at all times which they were doing—and that the patient should be clear as well. Sticking needles and catheters into the patients in guise of treatment when what was done was really in search of knowledge seemed to Dr. Cullinan very near to common assault.

One of the patient's main needs was the knowledge and courage to adjust his world to his disability. The cleavage between psychologists and physicians was still too wide, and it was clear that a sharp separation between organic and functional illness was no longer tenable. All illness had some emotional content and all doctors were capable of listening to the patient's story, allaying anxiety if possible, helping him to adjust, and doing everything possible to see he had all necessary aid. This was ordinary good doctoring. The patient in hospital should be credited with intelligence and not regarded as an object or a disease (" the appendix in number 6 "). It should be explained to him that nurses and students were learning, which was why there was something always being done, such as the eternal smoothing of bedclothes. Everything possible should be done to forestall the plea " I was told nothing ".

When the patient left hospital his general practitioner should know all about him before he got home. If he was not fit enough to go home, it was not just enough to say would you like to go to a convalescent home or to an old people's home? Did consultants, practitioners, and students know the labyrinthine network of ways in which the patient could be helped—the realm of the State, the local authority, the voluntary bodies? Could anything be done under National Health Insurance, or by the Assistance Board, the Ministry of Labour, or the local authority's many services? And could the patient benefit from any of the help offered by one of the many voluntary bodies? The patient could get into a sort of no-man's-land between different bodies, and the general practitioner should know what was happening and act as a sort of " humane umpire " all the time. In all this systemisation, he might be the only remaining impartial adviser, bodily and even spiritually throughout the patient's life.

Dr. R. R. BOMFORD emphasised the physician's obligation to deal with the whole person and the total disability. We often dealt relatively well with the patient's physical disease, but we made a mess of treating the patient as a person. Dr. Charles Newman, in his book, *The Evolution of Medical Education in the Nineteenth Century*,[1] had suggested that the new growing-point of medicine would be the understanding and control of the mind and of the mental aspects of all diseases. Dr. Bomford was prepared to argue that Freud had made the greatest contribution to clinical medicine in the past hundred years, because he had introduced a new clinical method—listening to the

1. See *Lancet*, 1957, ii, 411.

patient in a new way and attending not so much to what he said but how he said it, and because he had demonstrated the potentialities of the doctor-patient relationship, which could be pathogenic as well as therapeutic, and occasionally lethal. The idea that only acute organic disease was truly the province of the physician probably contributed to the relative neglect of mental disease; and the treatment of old people and the chronic sick suffered in the same way.

If doctors were really going to try to deal with the whole patient, some reorganisation of their affairs was essential. It was not enough to create special departments: difficulties of time and space had to be surmounted to give the physician better opportunities and conditions. If students saw their teachers taking hurried histories, detecting what physical signs they could in a brief examination, and making a purely physical diagnosis, they would follow this example.

Turning to the doctor's obligation to inform people about health and disease, Dr. Bomford declared that most of the complaints about the hospital service would vanish if those in charge took time to talk to patients and relatives. A defect of health education was its tendency to present over-dramatised snippets of technical information. If the whole thing was made to sound magical, some of the public might expect a magic cure for everything. Dr. Bomford had been much interested by those of the recent B.B.C. television programmes that he had seen, but he questioned the wisdom of dramatising certain advances which, though undoubtedly important, were applicable to very few patients. What was wanted was a biological approach, based on the notion of health as a measure of a person's success in reacting to his environment. To put this over was difficult, but if laymen could be got to think of their health in this way, they would be in a much better position to meet illness. At present doctors were failing to give the patient an idea of his own part in his illness.

Dr. HORACE JOULES referred to Dr. Ffrangcon Roberts' point that medicine was losing the battle to reduce mortality in men over 60—and in men over 50 as well, Dr. Joules added. Doctors were failing to do as much preventive work as they should in industrial medicine. Thanks to Schilling's classical work, the causes of byssinosis were well defined; but too little was being done to prevent it. Again, progressive massive fibrosis of the lungs could be much reduced if doctors would only insist on the eradication of tuberculosis among miners. Bronchitis continued to take its toll; and doctors went on abetting the rise in the mortality and morbidity from chest diseases by their own example in the matter of smoking. Indeed medical schools seemed to be hothouses of tobacco addicts. Two hundred years ago the Royal College of Physicians was more alive to the problems of gin than it was today to those of tobacco addiction. Dr. Joules was deeply disappointed that the profession, with its representatives on all committees of the National Health Service, had failed to act. The Central Health Services Council had been a whited sepulchre since its inception. Physicians must lead the renaissance in preventive medicine that Britain so badly needed.

Prof. CLIFFORD WILSON believed that the profession would not be fulfilling its obligation to the community unless it gave more vigorous support to research. It was a frustrating experience to select men who were well suited to do research and then to find that no position of reasonable security could be offered them.

Dr. J. H. WALTERS remarked that in some parts of Africa the infant-mortality rate was 400 per 1000 births. Yet these populations remained static or increased in size, so if health was looked at in the way Dr. Bomford suggested (as success in reacting to environment) it might be said that these populations were healthy.

Dr. W. R. THROWER suggested that doctors might accept a wider responsibility and use their position to influence the people who could get things done; and Dr. FFRANGCON ROBERTS agreed that they should have such influence as broad-minded well-educated citizens—but not primarily as doctors.

Reviews of Books

The Principles and Art of Plastic Surgery

Sir HAROLD GILLIES, C.B.E., F.R.C.S.; D. RALPH MILLARD, JR., M.D. London: Butterworth. 1957. Pp. 652. £12 10s. (in two volumes).

Sir Harold Gillies' first book, *The Plastic Surgery of the Face* (1921), cemented the foundations of the international prestige of British plastic surgery: his second, shared with Dr. Millard, is really an account of his surgical life.

Plastic surgery in Britain is the child of the British Army. Enormous credit is due to those in the Army Medical Services who, in the dire days of the Somme, found the man and provided the means for the development of plastic surgery. Gillies rightly acknowledges the efforts of that peripatetic dentist, Sir Charles Valadier, in promoting his first plastic unit at Aldershot. He was also fortunate in the help he had from the director-general, Sir Alfred Keogh, and from his consultant, Arbuthnot Lane. After an early start at the Cambridge Hospital, Aldershot, Gillies moved to Sidcup. Here the fundamental organisation was friendly competition between British, Canadian, Australian, and New Zealand units—that is, Gillies, Risden, Newland, and Pickering, each in his own pavilion. To Lane this was a deliberate and advantageous arrangement, the one most likely to meet the overwhelming demand. The argument for such competitive teams is strong; but one outcome can be an excess of sectarian rivalry, and traces of this remain as a handicap to British plastic surgery today. A fortunate feature of the arrangements at Sidcup was the dental liaison with Kelsey Fry; and plastic surgery here was allowed to develop in concert with dental, orthopædic, or general surgery, as circumstances indicated. Elsewhere this has not always been so.

The book begins with the early repairs of major facial gunshot wounds of 1916–18. Many of these jaw wounds have been followed up into the 1950s, and the photographs taken thirty years after the original repair show the unsurpassed quality of the three-dimensional facial repairs by Gillies and his pupils in 1917–20. The full range of plastic surgery is conveyed with clarity and wit. The two authors share a sense of humour which carries them at times almost into levity; but this is offset by their sympathy and understanding of the patient as a whole. The basic techniques of plastic surgery are more clearly and simply described here than in any other surgical textbook in English. Gillies is modest about his contribution to the introduction of the tube pedicle: he developed it independently of Pilatov, who preceded him in Russia by a year. The many distinctive contributions which Gillies also made to the reconstructive surgery of the hand are probably appreciated by few—the " cockade " flap for the elongation of the amputated thumb and the transfer of toes to hands, for example.

The book has ample sections on the whole treatment of burns; and it records some remarkable successes. The wisdom of including detailed charts of fluid administration, a matter on which opinion now tends to be less dogmatic, may be questioned.

The claims of patients who seek operation for cosmetic reasons to be considered as truly in need of medical care are fully discussed. To Gillies, a patient who needs a face-lift is a patient in need of medical help, and he operates on the mind through the face. On the question of choice of operation for breast reduction, Gillies rightly draws attention to the advantages of the free graft of the nipple in elderly patients who need a major reduction. Most patients who want a breast reduction are middle-aged, and not interested in two-stage procedures; they want a substantial reduction and an attractive breast form in one operation, and for most of them the free-graft method of Thorek is probably the best available today.

A chapter is included on the difficult and controversial question of the surgery of sex conversion. Here it is impossible to be dogmatic, partly because there is no generally accepted definition of sex. There are different opinions about the appropriateness of operating on the external genitalia of people who ask for such operations. Transvestites of either sex may be unsatisfactory patients, but it is unreasonable to deny that they are largely a medical responsibility, and Gillies has courageously accepted an aspect of this responsibility. Valuable evidence can be expected from the later psychological outcome of his operations. At the moment it seems that the adjustment to life of the "women" who are converted into "men" is better, in the sense of their becoming more stable and more reliable, than is the conversion of "men", mostly transvestites with homosexual tendencies, into "women".

Gillies has been specially fortunate in his co-author, Dr. Millard, who devoted himself wholeheartedly to the enormous task of producing these concentrated volumes. His own contributions to surgery are growing, and the merit of his work in Florida is widely recognised. The book includes a chapter on anæsthesia by Dr. Ivan Magill, without whose help in devising the necessary anæsthetic techniques for jaw and facial operations the specialty would never have developed as profitably as it has. It is fitting that he should contribute to a book of historic importance, which must rank as one of the major surgical works in English of this century.

The Doctor, His Patient, and the Illness

MICHAEL BALINT, M.D., consulting psychiatrist, Tavistock Clinic. London: Pitman Medical Publishing Co. 1957. Pp. 343. 40*s*.

IN some medical schools, teaching about mental and emotional illness is still limited to a few lectures and to demonstrations of spectacular cases (Huntington's chorea, for example). Dr. Balint rightly says that students are told to treat the whole patient, but are given little or no indication how to do so, which is unfortunate because much of general practice is concerned with emotional illness. The untrained doctor may do harm: as Dr. Bomford observed at the meeting we report on p. 944, the doctor-patient relationship may sometimes be pathogenic and very occasionally lethal. Reassurance is often useless, and avuncular common-sense advice "is as limited and crude a tool as are carving-knife and screwdriver in surgery". On the other hand, there are good reasons for the deficiency: most students are probably too immature to grapple with their patients' emotional difficulties; and there is little real knowledge about the treatment of whole patients that students can be taught.

Dr. Balint has organised seminars at which a group of family doctors and a psychiatrist discuss patients; their objects are less to help particular patients than to train themselves in psychotherapy and to research into the illnesses encountered and the treatments needed. The group training can also help the doctor to achieve the personality change he usually needs, according to Dr. Balint, to be a successful psychotherapist, for his personality determines his response to his patient and the treatment he gives. The family doctor is well placed for such work. Unlike the specialist, he sees the whole patient, whom he meets in many ways—as physician, obstetrician, psychotherapist, and family friend. He sees the patient early in the illness when the prospects for preventive work are best; and unlike the specialist he is always available. Most who have tried it find it a heavy responsibility but richly rewarding.

Dr. Balint's book is based on material gathered at these seminars. It is really several books in one—an inquiry into the effect of the doctor on the patient (what he calls the pharmacology of the doctor as a drug), a plea for training in psychotherapy for suitable family doctors, a valuable source-book for anyone seeking to organise similar seminars, and a call for research into the pathology and treatment of the whole patient—which can be done only by general practitioners, and perhaps best through the type of meetings that Dr. Balint describes.

Everyone will take issue with some of his ideas; but there is so crying a need for research and training on the lines he advocates, and his book is so eloquent and modest a plea, that we hope it will be read by very many family doctors, psychiatrists, and teachers of medicine.

Surgical Management of Pulmonary Tuberculosis

Editor: JOHN D. STEELE, M.D., associate clinical professor of surgery, University of California School of Medicine. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1957. Pp. 213. 72*s*.

THIS monograph is dedicated to the memory of John Alexander "with the affection, admiration and gratitude" of the thoracic surgeons he trained. Similar monographs on other aspects of thoracic surgery will follow. The surgery of pulmonary tuberculosis was Alexander's first interest—and the book on which he was working at the time of his death was to have had a similar title. To produce a book which is a worthy memorial to a great figure is, however, far from easy and imposes certain limitations on editor and contributors which make repetition and stodginess hard to avoid. In the circumstances original thought is scarcely to be expected and the authors have largely resorted to a historical review supplemented by a description of technique and an assessment of results. The chief merit of the work, therefore, is as a historical document and in this respect its painstaking assiduity gives it a high standard. It is beautifully produced and the illustrations and documentation are impeccable.

In the future the book will no doubt be regarded as a monument to the era when thoracic surgery in tuberculosis was feeling its way towards the simple and effective solution ultimately provided by chemotherapy and resection. The conviction grows in the reader's mind that such procedures as cavernostomy, plombage, even thoracoplasty, are almost bygones, mainly because of chemotherapy; and it is to the credit of the editor that he has included a comprehensive review of chemotherapy, so marking the settled position it has achieved in tuberculosis treatment.

Alexander, one of the first to specialise exclusively in thoracic surgery, had a great influence on its development in the United States, and it is fitting that his merit should receive this unique tribute.

Current Therapy (Philadelphia and London: W. B. Saunders. 1958. Pp. 781. 84*s*.).—Prof. Howard Conn's annual is a little bigger and dearer this year, but it is a good investment for any hospital. Its principal user will probably be the houseman who wants to know quickly the modern treatment for some emergency or some condition that is uncommon or out of his experience. It would doubtless be impossible to compile a book of this sort to please everyone, but there is little here to quarrel with. Some eyebrows will rise at the injunction to prescribe dihydrostreptomycin 4 g. daily for 6–8 weeks in endocarditis, and at the choice of propylthiouracil in thyrotoxicosis.

An International Symposium on Aldosterone (London: J. & A. Churchill. 1958. Pp. 225. 40*s*.).—It is four years since aldosterone, the only adrenal hormone which seems free from pituitary control and plays a direct part in homœostasis, was isolated in crystalline form. Last June the Clinique Thérapeutique of the University of Geneva organised a symposium, under the chairmanship of Prof. R. S. Mach, and attended by European and North American workers; the proceedings are here edited by Dr. Alex F. Muller and Miss Cecilia M. O'Connor.

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THE LANCET

LONDON 3 MAY 1958

Safety in Prostatectomy

THERE have been three phases in the short but eventful history of prostatectomy. On Dec. 1, 1900, FREYER performed his first transvesical operation.[1] He was not without his forerunners [2–4]; but he was the first to prove beyond doubt that benign enlargement of the prostate constituted a surgical challenge. He was soon joined in the fray by other pioneers, such as RUTHERFORD MORISON [5] and THOMSON-WALKER [6] in this country and JUDD [7] and YOUNG [8] in America, and by the end of the 1914–18 war the soundness of the operation was firmly established. As is the common fate of bold surgical ventures, there followed a period of comparative stagnation and even of smugness. The masters consolidated their technique; their teaching spread; the operation rapidly gained in popularity; but the mortality and morbidity rates remained unchanged. For a new and still almost experimental form of surgery both rates were gratifyingly low; but, considering that the operation was undertaken for an essentially benign condition, these rates were not inconsiderable. In the inauguration of the third phase HARRIS [9] played a decisive part. His technical innovations were by no means dramatic; but he set out the details of his operation with unsurpassed clarity: his step-by-step account of the management of patients could be followed by any busy general surgeon; and, most important perhaps, he turned his own, and he drew his colleagues', attention from the theatre to the ward. By careful pre- and post-operative care prostatectomy was to become safe as well as sound.

It has been said with much justice that " more patients die by the catheter than by the prostatectomy " [10]; and it is therefore right that the catheter should have become the crux of surgical inquiry and dispute. MCEACHERN and his colleagues [11] at the Royal Adelaide Hospital advocate urethral catheterisation. After decompression the catheter is tied in. In cases of acute retention operation follows decompression at any convenient time within thirty-six hours; " a faster tempo than this is considered to be unsound practice, because . . . there are too many important associated conditions which may be missed if the journey from receiving room to theatre is too short ". Chronic retention is relieved by slow decompression; and if the blood-urea-nitrogen is over 40 mg. per 100 ml.—especially if this is manifest by uræmic symptoms—catheter drainage is continued under chemotherapeutic cover for seven to ten days. MCEACHERN claims that the dividends of this policy, both in lessened mortality and in shortened convalescence, have been gratifying; and statistical support for this claim is not wanting. On the other hand, surgeons who prefer the suprapubic route of decompression, and those who reject any form of catheterisation as an unnecessary evil, can point to results which are at least equally good [12 13]: and many would regard MCEACHERN's management of chronic retention as retrograde. " Slow decompression," WELLS [14] said recently, " a sine-quanon of recent days, is now, I presume, defunct. It was based upon the theory that rapid decompression caused hæmorrhage and suppression of urine, complications now recognised as due to trauma and infection, or to electrolyte imbalance." WELLS also criticised the facile acceptance of infection as an inevitable concomitant of stasis. Autogenous infection of the bladder from the kidneys is certainly rare; and stasis per se does not lead to infection. Only when stagnant urine is contaminated by catheter or by cystoscope does it become (and remain) infected. With many practical obstacles barring the way to routine immediate prostatectomy, the risk of preliminary drainage may have to be accepted; but it remains a grave risk.

Urethral catheterisation can lead to bladder infection in at least three different ways. Organisms can be introduced by the catheter itself; and those who see this as the main danger prefer the indwelling catheter to repeated catheterisation. Others picture the formation of a thin film of " culture-medium " between the catheter and the urethral wall—a broad highway rather than a free passage for organisms—and they recommend withdrawal of the catheter as soon as the bladder has been emptied. Finally, the importance of intraluminal spread is shown by the reduced incidence of postoperative infection with the aseptic closed-bladder drainage.[15 16] The provenance of the organisms is equally obscure. Autogenous sources—the bowel and the traumatised prostatic bed—may account for some infections; but more and more evidence favours true cross-infection.[17]

Unfortunately, catheterisation is still undertaken for no good reason far too often. Acute retention can often be relieved by more homely and less dangerous methods; and to pass a catheter merely to measure exactly the amount of residual urine is the essence of meddlesome surgery.

Abuse of antibiotic cover is so common that it would be surprising if this branch of surgery were exempt; the increasing proportion of resistant strains of *Escherichia coli* and *Staphylococcus aureus* isolated from specimens of urine after catheterisation need cause no surprise.

In their operative technique MCEACHERN and his colleagues differ little from surgeons in this country. They approach the prostate by MILLIN's retropubic route [18] and follow HARRIS's method in the enucleation of the gland. Like others, they have found chemotherapy no substitute for ligation of the vasa deferentia. A rise in the incidence of osteitis pubis cast a cloud over the early history of MILLIN's operation; but MCEACHERN

1. Freyer, P. J. *Brit. med. J.* 1901, ii, 125.
2. McGill, A. F. *ibid.* 1899, ii, 863.
3. Belfield, W. T. *Amer. J. med. Sci.* 1890, **100**, 439.
4. Fuller, E. J. *J. cut. gen. urin. Dis.* 1895, **13**, 229.
5. Morison, R. Surgical Contributions. London, 1907.
6. Thomson-Walker, J. W. *Trans. med. Soc. Lond.* 1930, **53**, 143.
7. Judd, E. S. *Coll. Pap. Mayo Clin.* 1917, **9**, 254.
8. Young, H. *J. Amer. med. Ass.* 1903, **41**, 999.
9. Harris, S. H. *Brit. J. Surg.* 1934, **21**, 434.
10. Creevy, C. D., cited by Wells, C. A. *J. R. Coll. Surg. Edinb.* 1956, **2**, 120.
11. McEachern, A. C. *Ann. R. Coll. Surg. Engl.* 1958, **22**, 151.
12. Wells, C. Prostatectomy. Edinburgh, 1952.
13. See *Lancet*, 1956, ii, 343.
14. Wells, C. *J. R. Coll. Surg. Edinb.* 1957, **2**, 120.
15. Pyrah, L. N., Goldie, W., Parsons, F. M., Raper, F. P. *Lancet*, 1955, ii, 314.
16. Goldie, W. *Proc. R. Soc. Med.* 1956, **49**, 1047.
17. Gillespie, W. A. *ibid.* p. 1045.
18. Millin, T. Retropubic Urinary Surgery. Edinburgh, 1947.

agrees with MORTENSEN [19] that this complication is far less common today.[20] Bleeding, on the other hand, is certainly heavier when the prostate is approached by the retropubic than by the transvesical route [21 22]; and "inspection of the sucker bottle and the swabs at the end of each operation will justify the routine administration of 600 cc. of blood in all cases".[11]

If minor differences in operative technique are unlikely to arouse much controversy, the same may not be true of postoperative management. In addition to ADAMS's [23] "third ureter"—a ureteric catheter introduced either suprapubically or alongside the urethral catheter—MCEACHERN administers for the first twelve to twenty-four hours after operation an intravenous drip, somewhat fancifully referred to as the "fourth ureter".

Few will dispute that the parenteral administration of fluids has many advantages over "pressing fluids" by mouth; but that "the third ureter compensates for, while the fourth ureter overcomes, Nature's postoperative oliguria" [11] is only true if these terms are interpreted so widely as to lose all meaning. "Nature's postoperative oliguria" is part of the body's complex response to any form of trauma; and far from being amenable to correction by intravenous fluids, it is likely to be aggravated by it. The "third ureter" does correct postoperative oliguria in the sense that it contributes a flushing system while there is danger of bleeding and of catheter blockage. But the "fourth ureter" does nothing to overcome it. What it does do is to correct the very reverse—namely, the excessive loss of water and electrolytes which may follow relief of long-standing obstruction.

Patients with chronic urinary obstruction tend to accumulate a backlog of salt and crystalloids, shown in part by œdema, a high blood-urea-nitrogen, and a total plasma osmolarity higher than the sum of measurable anions and cations. Some desalting and hæmoconcentration may result from vomiting and from pulmonary water loss; but the "dehydrated" appearance of these patients is usually due to uræmia; and they are, in fact, grossly waterlogged. As soon as obstruction is relieved—whether by simple catheterisation or by prostatectomy—solute diuresis begins. If renal function is normal this is a transient phase; the renal tubular cells quickly regain their ability to process the filtrate and to concentrate the urine; and dehydration and desalting remain minimal. In older patients, however, some tubular damage is common; and the postobstructive diuresis may result in severe salt and water depletion, hæmoconcentration, and decrease in plasma-volume.[24] In addition, there is a tendency to acidosis, suggesting impairment of the enzyme systems in the proximal tubules.[24] 5–8 litres of urine of fixed specific gravity may be passed in twenty-four hours; and the sodium loss may be massive. (Largely according to the water balance, this may lead to a significant fall in the plasma as well as the total sodium concentration.)

The guiding principle of intravenous-fluid therapy after prostatectomy should be to preserve the precarious postobstructive fluid balance rather than to maintain a steady stream down the ureters. MOORE [24] believes that "this is one of the few situations in surgery where a conscientious attempt should be made each day to repair the urinary loss of sodium salts"; and large infusions of sodium bicarbonate or lactate may be required. This is no easy task, especially postoperatively; and clinical judgment must temper biochemical considerations. (In the presence of pitting œdema, or of other evidence of increased total body sodium, it may be wise, for instance, to allow the sodium drain to proceed for a few days before any attempt is made to repair the loss.)

Most surgeons will agree with MCEACHERN that the indwelling catheter is "the pivot on which the whole technique of modern postoperative management depends", and that "there is no aspect of surgery in which trained and experienced nursing is more necessary".[11 20] There is, on the other hand, much to be said for not laying down a definite time after which the catheter should be removed. The correct time is neither two days nor two weeks after the operation, but whenever the patient can empty his bladder unaided and completely. A late postoperative complication which has caused some concern at the Royal Adelaide Hospital is postmeatal stricture. Its frequency seems to be increasing, but its causes remain obscure. MCEACHERN suggests that several factors may have to be considered: the size of the catheter in relation to the calibre of the urethra, the duration of catheter drainage, chemical irritation by certain types of red rubber,[25] and altered tissue response to infection as a result of chemotherapy.[26] Fortunately this complication is of importance only when neglected; and in only 2 patients of the Adelaide series was repeated dilatation necessary.

Routine Medical Examinations

THE practice of visiting a doctor or clinic regularly for a routine "health check" has long been common among the wealthier citizens of the United States, and there are signs of its increase in this country. The value of such examinations, which may include radiography, electrocardiography, and laboratory tests, has lately been the subject of correspondence in *The Times*. When Captain L. P. S. ORR, M.P.,[27] asked whether it is proper for the British Broadcasting Corporation to spend public funds on private routine examinations for its senior executives, the B.B.C. chairman [28] replied that £900 a year is "a small premium to pay towards the maintenance of the health of trained senior staff". Whereupon several distinguished physicians declared that routine examinations of this kind are virtually useless for their intended purpose—namely, the detection and successful treatment of symptomless disease.

Some readers of *The Times* will have discounted these medical utterances on the ground that doctors in general are commonly more interested in treatment than prevention. Such critics can point not only to America but also to Soviet Russia, where periodic examinations are officially regarded as a most desirable development in medicine, because they bring disease to notice at an earlier and more readily treatable stage. Is it not a fact (they may say) that many patients suppress and conceal serious symptoms which a routine examination would soon elicit? Would the profession

19. Mortensen, H. *Proc. Urol. Soc. Aust.* 1950, **4**, 43.
20. See *Lancet*, 1956, i, 328.
21. Goldstein, A. E., Rubin, S. W. *J. Urol.* 1948, **60**, 743.
22. Goodyear, W. E., Beard, D. E. *ibid.* 1949, **62**, 849.
23. Adams, A. *Ann. R. Coll. Surg. Engl.* 1951, **9**, 279.
24. Moore, F. D. *New Engl. J. Med.* 1958 ,**258**, 377.
25. Handfield-Jones, R. P. C., Lewis, H. B. M. *Lancet*, 1952, i, 585.
26. Kirkland, K. *Med. J. Aust.* 1955, **2**, 921.
27. *Times*, Feb. 5, 1958.
28. Fforde, A. *ibid.* Feb. 6, 1958.

have no useful advice to offer the considerable number of people who do not take their troubles to a doctor but whose way of living, if uncorrected, is sure to lead to one of the breakdowns of middle life? To such questions the answer is that sometimes, undoubtedly, the periodic examination can have good results, but that its advantages are very easily exaggerated. Contrary to what is often supposed, the approach of few disorders can be detected before symptoms appear: pneumonia, poliomyelitis, appendicitis, vascular thrombosis, and many other common illnesses strike down people in apparently perfect health. Secondly, early diagnosis does not, unfortunately, by any means certainly lead to successful cure. And thirdly, in many chronic disorders early diagnosis is not particularly important, because they can be cured equally well in the later, symptomatic stage.

The periodic overhaul has a strong appeal to a generation which thinks in terms of machines. But the human body is not a machine; and British doctors may be wise in rejecting this analogy and trying to weigh the advantages against the disadvantages—in practice not in theory. One practical disadvantage is that the cost of adding periodic examination to the amenities of the National Health Service would be enormous. In Soviet Russia a great many doctors now spend a great deal of time on examination of the healthy; and Sir JOHN CONYBEARE's [29] estimate of an extra £100 million a year for such examination is certainly not too high, if it is to be done properly. Could not this money, and the resources it implies, be used by the N.H.S. more effectively in other ways? Another and more fundamental disadvantage is that the system must, for many people, mean more thoughts about illness and more anxiety. Usually the examination itself, when the time came, would relieve such anxiety; and no doubt the majority would take their overhaul unemotionally as a matter of course. But routine checks have their psychological dangers even for the least neurotic. When a minor abnormality is found, and further tests and investigations are necessary to establish its cause, some concern is bound to be felt; and this may leave its mark even when the abnormality is finally found to be of no consequence.

If, then, periodic examination of everybody is very far from being the ideal preventive measure that it may appear, is there anything to be said for a routine health check on particular groups, as proposed by the B.B.C.? Not, we think, very much when it is only an occasional examination by a doctor who knows little or nothing of the examinee. But it may have some value in the special circumstance where a large firm or organisation employs a full-time doctor who will examine key employees at fairly short intervals, and who may be expected to know a good deal about their health and personality. As Dr. R. F. GUYMER pointed out,[30] such knowledge will sometimes enable the doctor to detect early signs of physical or mental overstrain, and his detailed records may show significant changes over a period. (A good general practitioner in a reasonably small single-handed practice is in a similar position, and a system of regular examinations may help him in the management of his patients.) The B.B.C.'s scheme may therefore have some usefulness if the Corporation propose to retain one particular doctor's services, and if he is to see each senior employee at least once a year. It would cost them less if they dropped the routine electrocardiography and X-ray examination. The latter is already offered by the mass-radiography service, and in any case the worth of the examination depends on the doctor's alertness. There is a story told of a well-known contemporary American physician who was asked to see an important but ageing business man whose firm proposed to send him on a vital mission abroad. The firm had had an exhaustive series of medical tests carried out, all of which the man passed successfully. Nevertheless, the physician's advice, given after a short physical examination, was uncompromising: "Don't send him." The firm, somewhat taken aback, protested that all the tests had been satisfactory, and asked what had been missed. Back came the reply: "Egg on his waistcoat."

29. *ibid.* Feb. 22, 1958.
30. *ibid.* Feb. 21, 1958.

Annotations

HOSPITAL MEDICAL STAFFS

LAST week the Minister of Health announced agreement with the Joint Consultants Committee to set up a joint working party "to study, in the light of experience of the hospital service since 1948 and of all other relevant considerations, the principles on which the medical staffing structure in the hospital service should be organised." [1]

This is welcome news. The working party's task will presumably include a review, in some form, of consultant needs—a review which the profession's representatives have repeatedly called for, and in which attention will no doubt be given to the unequal distribution of consultants [2] and to consultant work now done by others. But the working party will be concerned with larger issues. In particular it will want to discover whether, under the existing system, peripheral hospitals can continue to secure enough medical staff below consultant level. The number of registrars is fixed by other factors than the convenience of the hospital, and there is no inherent reason why this number should suffice for all demands; indeed there are increasing indications that it does not suffice. For instance, last month Luton and Hitchin Hospital Management Committee, impressed by the difficulty of filling the two registrarships in anæsthesia at Luton and Dunstable Hospital, decided to seek permission to regrade one post as that of S.H.M.O. The committee was informed that there are some registrars who, though unlikely to obtain the highest qualifications and become consultants, are nevertheless competent anæsthetists and valuable members of hospital staffs.[3]

We ourselves know of no sound evidence that the existing medical-staff structure, with the long leap from senior registrarship to a consultant post, has favoured efficiency in the hospital service; and it has even operated

1. See *Lancet*, April 26, 1958, p. 906.
2. *ibid.* April 5, 1958, p. 748; Joules, H. *ibid.* p. 739.
3. *Luton News*, April 17, 1958.

against some of the staff themselves—notably those senior registrars who have failed to make the leap, and senior hospital medical officers who have been largely excluded from the competition. In the short run, insistence that (with stated exceptions) permanent medical staff shall be grouped together as consultants has favoured those of them who, relatively, apply less skill or carry less responsibility than some of their colleagues. In the long run this grouping may tend to operate against those with relatively higher skill or a heavier responsibility. We have more than once expressed the belief that both the hospital service and the profession would have cause to welcome the abolition of the S.H.M.O. grade and the creation of a new one—that of specialist—to include all on the road to a consultant post besides some who aspire to go no further.[4] Not all our readers subscribe to this view.[5] But both those who do and those who do not will look with relief to the working party as a medium for discovering facts that may open a way out of the present damaging impasse.

The help meanwhile proposed by the Minister for some time-expired registrars [1] takes a devious and obscure form; but the Minister's hands are partly tied by the Royal Commission on Remuneration and by the Government's avowed determination to avert a general increase in salaries and wages. We see no reason to doubt the sincerity of his assurance that the new posts for selected senior registrars, with security of tenure and a somewhat higher salary, are to be provided " pending and without prejudice to the working party's report " and " are not to be regarded as a substitute for additional consultant posts ". Certainly, we should not wish to see the present first-aid measure cited as a precedent for setting up an intermediate grade. If (as we hope) such a grade is to come it should be introduced deliberately, frankly, and if possible by general consent.

MODIFIED ASPIRIN

ASPIRIN, the wonder drug of the time when it was introduced, is still unsurpassed in its field. Idiosyncrasy to it is very rare; but occasionally it causes gastro-intestinal hæmorrhage, probably owing to gastric erosions, and less rarely it gives rise to symptoms of gastric irritation. The forms, and the prices, of aspirin preparations vary widely. Aspirin *B.P.* gr. 5 costs a hospital 9*d.* per 100, whereas a proprietary preparation containing aspirin gr. 5 with aluminium glycinate and magnesium carbonate costs 6*s.* 6*d.* plus 1*s.* 11½*d.* purchase-tax. A high price is sometimes put on preparations claimed to be exceptionally pure, but today it is unlikely that impure aspirin is sold; the production of salicylic acid by hydrolysis is prevented by airtight storage.

The effectiveness of mixtures of aspirin with other analgesics, such as codeine, depends mainly on their aspirin content; the small amount of codeine, though of little therapeutic value, produces constipation in some patients. Calcium or soluble aspirin is about equal in analgesic effect to aspirin, but is often preferred because of its lesser tendency to produce gastric effects. Crushing aspirin is perhaps equally efficacious, though less convenient; but a badly made aspirin tablet may disintegrate slowly, and in this respect calcium aspirin is better.

Sodium bicarbonate was once prescribed with sodium salicylate to minimise gastric irritation. Behind this may have lurked the idea of " acidosis " brought about by salicylism—though, as we now know, salicylate causes overbreathing with subsequent alkalosis. Mixing aspirin with a buffer seemed a logical development to the incorporation of bicarbonate with salicylate; and several reports suggested that gastric distress was less common with buffered aspirin than with ordinary aspirin.[1–4] But studies conducted by blind random selection techniques have failed to show any difference between the two forms [5 6]; and blood-salicylate curves were found to be the same. (Batterman [5] showed that the incorporation of bicarbonate 1·2 g. with aspirin 0·6 g. lowered the free and total plasma-salicylate levels, thus confirming an earlier assumption.) Further tests on buffered and simple aspirin are needed in order to establish beyond doubt their value in relation to each other.

4. *Lancet*, 1957, i, 1127, 1133; 1957, ii, 1099.
5. *ibid.* 1957, ii, 1174, 1227, 1228, 1229, 1281, 1282, 1336; Jan. 4, 1958, p. 52, p. 53; Jan. 18, p. 164; Jan. 25, p. 220; Feb. 1, p. 261; Feb. 22, p. 437; March 1, p. 481; April 5, p. 739.

OCCULT FRACTURES

DIAGNOSIS of the fracture that is suspected clinically but cannot be demonstrated radiographically is an important orthopædic problem. It arises most commonly in the wrist; a fracture of the carpal scaphoid may not be apparent on the radiograph until several weeks after it has been sustained. Waiting for radiographic evidence in these patients may invite delay in union and ischæmic changes in the proximal fragment of the bone; yet it is scarcely more satisfactory to immobilise in plaster all patients with the clinical signs of a scaphoid fracture, since many will resolve without a fracture ever becoming visible.

In children spiral fractures of long bones commonly do not show on the early radiographs, and very often confirmation of a clinical diagnosis depends on the later X rays. Sometimes the only change which ever becomes apparent is periosteal thickening, but more commonly the fracture is seen some two or three weeks after the injury. Fractures near the epiphyses of long bones may also be difficult to display, but in this region immobilisation is less important. In the upper limb of the adult minor fractures of the neck of the radius or chip fractures of the head of the radius may become apparent only after repeated radiographs have been taken, and special views in many positions may be necessary. In the hip the undisplaced fracture of the neck of the femur is still occasionally misdiagnosed. Many of these patients will recover full function without any relief from weight-bearing, but in others the diagnostic failure results in non-union or avascular necrosis of the head of the femur. Fractures of the spine may be missed because the radiographs show little or no deformity, but this error in diagnosis is often of little importance since slight injuries to the vertebral body can well be treated by early exercises and mobilisation.

Reich and Rosenberg [7] emphasise the importance of relating the clinical to the radiological signs. They define the occult fracture as one which gives clinical signs of its presence but cannot be demonstrated by X-ray examination until reparative changes have occurred. (Perhaps this is an over-optimistic definition since some of the fractures may not be diagnosed until delay in union or

1. Paul, W. D., Dryer, R. L., Routh, J. I. *J. Amer. pharm. Ass.* 1950, **39**, 21.
2. Tebrock, H. E. *Industr. Med.* 1951, **20**, 480.
3. Freemont-Smith, T. *J. Amer. med. Ass.* 1955, **158**, 386.
4. Feinblatt, T. M., Feinblatt, H. M., Ferguson, E. A., Price, A. H., Healey, J. E., Allison, W. *N.Y. St. J. Med.* 1958, **58**, 697.
5. Batterman, R. C. *New Engl. J. Med.* 1958, **258**, 213.
6. Cronk, G. A. *ibid.* p. 219.
7. Reich, R. S., Rosenberg, N. J. *J. Amer. med. Ass.* 1958, **166**, 563.

avascular necrosis is inevitable.) In these cases it is important not to discard clinical judgement, and the surgeon who examines his own radiograph is more likely to spot the minor lesions. Among the most difficult of these to discover is the small stress fracture; and Burrows[8] has emphasised that many views of the tibia may be necessary to demonstrate the small area of stress infraction. In many cases we undoubtedly lay too much stress on the slight lesion of the bone and forget or ignore the extensive soft-tissue destruction with which this may be associated.

INFANTILE SCURVY IN CANADA

THE incidence of scurvy in infants has shown a decided rise in Toronto in recent years, and Whelen et al.[9] have described the clinical findings, feeding histories, and errors in diagnosis in 79 cases treated in the wards of the Hospital for Sick Children, Toronto, in the five-year period 1951–55. Until 1953 the average yearly total of admissions for scurvy over a period of twenty-six years had only been 7, whereas in 1954 it was 46. Half of these patients lived in Toronto. The age at onset of symptoms and the clinical manifestations were typical and call for no special comment. What is surprising is that in this age of vitamin-consciousness the disease should show a striking rise in incidence (which is apparently also evident in Winnipeg) in a city with a good record for pædiatric services and public health.

The cause was clear. Nearly four-fifths of the infants had not received either suitable fruit juices or synthetic ascorbic acid for six weeks before admission. In two-fifths some orange juice had been offered in the early months but had not been persisted with. The average duration of breast-feeding in the series was less than 11 days; and the alternatives as regards milk—evaporated or pasteurised liquid milk—did not contain enough vitamin C. The infants in the hospital invariably improved rapidly when given therapeutic doses of vitamin C, and this was held to discount the statement of parents in a fifth of the series that their children had been given enough of the vitamin in their diet. The next question was whether in these instances, or in any of the series, "the well-meaning but unnecessary manipulations of the most imaginative mother" had destroyed the vitamin C in any of the fruit juices used. Surprisingly, in view of the general impression that heat will destroy vitamin C, the Toronto workers found that the addition of boiling water, boiling the orange juice, alkalinisation, and alkalinisation followed by boiling, applied to fresh, tinned, or reconstituted frozen concentrated orange juice, did not reduce the vitamin-C content to a dangerously low level. Even boiling for forty minutes "in an uncovered, chipped, rusty, enamelled saucepan" reduced by only 15–25·5% the vitamin C measured by decolorisation of the accepted phenolindophenol dye solution.

These results are important in view of the alarm expressed by Moncrieff[10] at the use of the pasteurised orange juice now supplied by certain milk firms for babies and young children. The plain fact seems to be that babies get scurvy because they do not receive orange juice at all. One reason is thought to be the unnecessary use of synthetic multiple-vitamin preparations which may not, in fact, contain any vitamin C. One of the suggestions made by Whelen et al. is that vitamin C might be incorporated into certain foodstuffs commonly consumed by infants, as is done with vitamin D in evaporated milk. Every infant requires at least 30 mg. of vitamin C daily, and this, it is suggested, should be emphasised more strongly by doctors and others concerned with the supervision of infant feeding.

8. Burrows, H. J. *J. Bone Jt Surg.* 1956, **38B**, 83.
9. Whelen, W. S., Fraser, D., Robertson, E. C., Tomczak, H. *Canad. med. Ass. J.* 1958, **78**, 177.
10. Moncrieff, A. *Lancet*, 1957, ii, 340.

OVERSEAS STUDENTS AND POSTGRADUATE STUDY

ORGANISERS of postgraduate medical education in this country have no easy task: their sails have to be trimmed to many winds. The clinical requirements in Great Britain are a world away from those in remote tropical or deprived communities, and these, again, differ from the demands of our wealthy and energetic Dominions. In the great days of British rule overseas, students automatically turned to Britain for training in our views and methods. Of late years some things have changed, but tradition and prestige, and perhaps proved value, still ensure a flow of men and women from all parts: it is often said, too, in poorer countries that there is more of relevance to be learnt from our financially restricted health-service system than from affluent and uncontrolled American methods. It is an honour to us that they come, though we should not assume it is purely a love of Britain and of knowledge that brings them: the coveted diploma often means everything. Obviously we as a nation benefit from these contacts on many fronts other than the purely scientific, and we should ask ourselves from time to time whether we are giving these friends from abroad what they need, and whether we are giving it to them well enough.

Dr. Cicely Williams, writing in this issue and the last on child welfare, clearly thinks that we are not. Her penetrating remarks are derived from observations in South East Asia and Africa. She says with reason that a study of rare disorders in the Western setting of large institutions is not much help (and may even be a hindrance) to the doctor from a far-off land. Though Dr. Williams may take an over-rosy view of the potential sociological importance of doctors, it could be said that others besides our overseas colleagues would benefit from greater understanding of social factors (for example, in smoking and dietary fat). If we feel that our foreign contacts are worth encouraging (and surely they are) perhaps we should readjust our emphasis. Clearly it is out of proportion for an Asian to be examined in detail on the Klippel-Feil syndrome and not on kala azar; similarly it is unnecessary for the provincial specialist here to be acquainted with recent trends in leprology. There seems to be room for some curricular adjustment, and there might be advantages in an alternative second paper in some of our specialist diplomas, dealing with tropical, nutritional, social, and public-health questions. It would tax the resources of our teachers; for, while many have had tropical experience in the Armed Services, this does not help much in the understanding of village life and problems. Short visits to these countries do not help much either, since, as Dr. Williams points out, it is not easy for the European specialist to see beyond the shiny new prestige institutions to the neglected aspects of medical and social life. Even a doctor in daily contact with Indian rural patients may be amazed at his ignorance of their everyday beliefs and superstitions, lately described by Carstairs.[1]

1. Carstairs, G. M. The Twice-Born. London, 1957.

If, however, the training and diplomas we have to offer are not (through other eyes) all they might be, it is also sadly true that foreign students arriving here are sometimes inadequately prepared for them. Linguistic and academic difficulties added to those of everyday adaptation may plunge a young doctor out of his depth, and he may never really resurface. Something more could be done from both ends by way of selection and preparation, although some Governments and the British Council already do valuable work. We believe that if Britain (and especially London) is to remain a sought-after centre of teaching and research it must broaden its horizons. Dr. Williams has told us something of what is needed from the pædiatricians: her words are wise and deserve careful study.

NARROWED ATTENTION

STRONG emotion, acute stress, or the action of certain drugs can dramatically reduce awareness of the immediate environment. Callaway and Dembo [1] discuss the possible neurophysiological basis for this familiar phenomenon, for which they suggest the term "narrowed attention", and which, in their view, is something other than altered ability to sense or respond to a stimulus. It is, they believe, rather a change in the process which determines to what extent behaviour shall be influenced, at a given time, by each possible source of stimuli. The more a person's attention is "narrowed", the less will his behaviour be influenced by factors peripheral (in time or space) to the focus of attention.

Callaway and Dembo believe that "narrowed attention" augments internal sources of motivation, that it is associated with (but is not the result of) central sympathomimetic activity, and that both phenomena are perhaps secondary to stimulation of the brain-stem reticular formation. To establish the correlation between "narrowed attention" and central sympathomimetic activity, they observed the effect on their subjects' behaviour of sympathomimetic drugs. They report that amyl nitrite, adrenaline, and methamphetamine produced changes in size-matching; nerve-gases, amyl nitrite, and methamphetamine produced changes in muscle response to loud sounds; and methamphetamine produced changes in galvanic skin response and in guessing behaviour. All the changes were indicative of "narrowed attention".

Calloway and Dembo remind us of the everyday instances of narrowed attention: people may become "blind with rage", or the football player ignore his injured hand in the heat of the game; and they quote Kinsey's [2] finding that orgasm narrows attention, and Shipman's [3] that children, waiting at the dentist's, recall fewer details of their surroundings than do controls. Callaway and Dembo mention two instances in which, during their experiments, subjects showed "narrowed attention" apart from their experimental responses. One student with a broken arm in a cast felt less uncomfortably aware of it under methamphetamine. The same drug led another student to be blind to the polite rebuffs he encountered while trying to "date" a female technician, and to desist only when faced with a flat refusal. From the clinical viewpoint, they suggest that the action of methamphetamine in improving the behaviour of hyperkinetic children, described by Laufer et al. [4] as "unusually sensitive to stimuli flooding in from both peripheral receptors and viscera", may be related to the narrowing of attention produced by the drug.

This study will encourage other approaches to the problem of the relation between sensory stimuli and internal processes.

1. Callaway, E., Dembo, D. *Arch. Neurol. Psychiat.* 1958, **79**, 74.
2. Kinsey, A. B., Pomeroy, W. B., Martin, C. E., Gebhard, P. H. Sexual Behaviour in the Human Female; p. 613. Philadelphia, 1953.
3. Shipman, V. M. A. Thesis presented to the Eastern Psychological Association, 1955.
4. Laufer, M. W., Denhoff, E., Solomons, G. *Psychosom. Med.* 1957, **19**, 38.

MENTAL ILLNESS AND SOCIAL CLASS

THERE has been an increasing trend in medicine lately for the searchlight to be turned, as it were, inwards towards us, the doctors. On an organic level we all know of the survey into our smoking habits, and we should be glad indeed to find out why we seem so liable to coronary-artery disease. The psychoanalysts take the investigation of the doctor further than others, insisting that the aspiring therapist undergo a long and difficult training-analysis that will give him insight into his own mental mechanisms. Merton [1] recently summarised some of the sociological work done in medical schools in the United States, and there have been studies of mental hospitals and their personnel.[2 3] The permeation of anthropological and sociological influence is particularly seen in investigations of mental illness, though the fusion of specialties is by no means always friction-free.[4] The United States is clearly far ahead of us in this type of project.

On April 17 Prof. A. B. Hollingshead, the distinguished sociologist from Yale University, outlined at the Maudsley Hospital some of his work with Dr. F. C. Redlich,[5] on mental illness and social class, especially that related to the practice of different psychiatrists and psychiatric institutions. He studied all those resident in New Haven (Connecticut) who, during six months in 1950, had undergone psychiatric treatment, wherever that treatment had been given. He graded the 1900-odd cases according to his 5-scale social-class system [6] and correlated this with the type, place, and duration of therapy. Some expectations were confirmed—for example, that psychoanalysis was almost exclusive to the richer classes, whereas the poorer made do with simple and brief measures. For the psychoses he showed that the wealthier patients received earlier treatment and were discharged from hospital more quickly, but that they were readmitted more frequently. A more surprising finding was that therapy correlated little with diagnosis, and that the type of treatment was therefore more or less determined before the patient ever met the doctor he had selected. Professor Hollingshead noted the division between those psychiatrists who used physical treatments and those who eschewed them and concentrated exclusively on psychological methods and interpretations. The two schools are certainly to be found in this country,[7] but here, apparently, the boundaries are less clear-cut.

It seems, therefore, that just as a person's class position determines his place of residence, friends and hobbies, so it decides—anyhow in the United States—the therapy he will receive when mentally ill. Perhaps Professor Hollingshead will one day tell us to what extent it determines the type of illness he will get. A similar piece of research in this country would not be easy, but might be rewarding; and a survey of the views and methods of all psychiatrists within six miles of St. Pancras would be worth attempting.

1. Merton, R. K., Bloom, S., Rogoff, N. *J. med. Educ.* 1956, **31**, 552.
2. Stanton, A. H., Schwartz, M. S. The Mental Hospital. London, 1954.
3. Greenblatt, M., Levinson, D. J., Williams, R. H. The Patient in the Mental Hospital. Chicago, 1957.
4. Simmons, O. G., Davis, J. A. *Amer. J. Sociol.* 1957, **63**, 297.
5. Hollingshead, A. B., Redlich, F. C. Social Class and Mental Illness. New York, 1958. (To be published in London in July.)
6. Hollingshead, A. B. Elmtown's Youth. London, 1949.
7. Cobbleigh, R. *Lancet*, Feb. 8, 1958, p. 310.

Special Articles

FAST AND SLOW STREAM MEDICAL WARDS

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JUST as road travel is improved by the provision of fast and slow lanes, so the diagnosis and treatment of medical patients could be made more efficient by the care of patients in wards with a fast or a slow rate of turnover of beds.

In the past this division has taken place, but between hospitals rather than between wards. The slow-stream wards are concentrated in special hospitals for the chronic and elderly sick. Anyone who has worked in such a hospital knows, however, that many of the patients admitted are in need of just the same diagnostic skills and treatment as the patients who happen to be admitted to a general hospital. Often it is the availability of beds at the time of a request for emergency admission that determines whether a patient of 60–65 is admitted to a geriatric hospital or to the wards of a general hospital; this is tantamount to saying that the decision is largely one of chance. If the patient admitted to a geriatric unit is found to require investigation or treatment which cannot be provided at that hospital, he must be transferred to a general hospital. If, on the other hand, it is found that the patient admitted to a general hospital is unlikely to get well within three to six months, it may be desirable to transfer him to a geriatric hospital. Such transfers are difficult to achieve unless the physician-in-charge has beds at both hospitals, and in any case they are administratively wasteful and emotionally damaging to the patient.

One may hear physicians and surgeons who work in a hospital where the weekly cost of an occupied bed is £25 or more complain because they cannot easily transfer their more chronic patients to a geriatric hospital, and on the same day listen to the grumbles of geriatricians who find themselves dealing with certain inpatients for whom they have inadequate facilities for investigation and treatment. I repudiate the suggestion that all elderly sick patients need full investigatory facilities. The clinical senses are usually quite sufficient to reach an accurate diagnosis and prognosis; but there are some cases where careful investigation is necessary and useful.

The problem is more one of the slow recovery and of social difficulties to be overcome before the patient is discharged. This sort of patient can be inexpensive to nurse and to treat, but he needs a hospital bed for longer than a young patient admitted for—shall we say—stabilisation of his diabetes. The overall cost of his treatment may be much the same as that of the younger patient who in his shorter stay uses up more of the time of highly trained, highly paid staff, and makes fuller use of expensive diagnostic facilities.

Therefore we have on the one hand a need for acute wards, fully staffed by highly skilled personnel, in which the turnover is so rapid that 30 patients per annum can be treated per bed. On the other hand there is need for slow-stream wards staffed by the same medical team, but with a different grade of nurses, where the need for investigation is less, and the emphasis on nutrition, rehabilitation, and nursing care is greater.

Acute wards usually contain 25% of ambulant patients admitted for special investigations, 25% acutely ill and requiring hour-to-hour treatment or intravenous therapy, and the remainder recovering from acute illness or being treated in bed. The slow-stream wards usually contain 20% bedfast patients with dementia or various forms of paralysis, 20% of patients who are likely to die within six months from carcinoma or other fatal diseases, 20% frail ambulant patients who are unable for social reasons to maintain a reasonable life outside a hospital, and the remaining 40% elderly but capable of recovery, given time and patient effort—cases of congestive heart-failure, hemiplegia, and chronic lung disease. In such wards it should be possible to treat 4 patients per bed per year.

The present trend towards the development of geriatric and exclusively acute general hospitals leads to an inequitable distribution of nursing staff. The geriatric hospitals have the greatest difficulty in recruiting staff in spite of State enrolled assistant nurses scheme, and the free use of nursing auxiliaries. The teaching hospitals have nurses to spare (though this would rarely be admitted), and these nurses sometimes have little experience of the nursing of the elderly sick. This is a pity because in the next twenty years we must face a 14% increase in the numbers of elderly sick. It is fortunate that many elderly patients are in fact nursed and treated in acute general hospitals today, but it is nevertheless a pity that nurses in training see little of the intensive methods of rehabilitation and perhaps do not experience the different mental approach needed in the care of the elderly sick.

THE OBSTACLES

One of the main obstacles to the integration of acute and geriatric medicine in hospitals is the policy of the General Nursing Council, which makes it difficult to house training schools for State-registered nurses, and State enrolled assistant nurses in the same hospital. Nurses under S.E.A.N. training may not work in the same wards as nurses under S.R.N. training. At the time ten years ago when it was clear that many hospitals would have to close down unless a shorter course of nurse-training could be provided, the State enrolled assistant nurses scheme was born of necessity. After this lapse of time, it must be clear that the standards of nursing have not suffered by the introduction of the State enrolled assistant nurses scheme, and State-registered nurses have not contracted any dread diseases from working in close proximity to State enrolled assistant nurses.

Another obstacle to the inclusion of slow-stream wards in acute hospitals is the system of classification of hospital by the Ministry of Health into, "acute", "mainly acute", &c.—each with its own scale of finance. This makes the hospital management committees, which are jealous of the status of their hospital and anxious for the fullest financial provision, unwilling to admit more than a very small proportion of elderly sick patients, and certainly unwilling to segregate them in special wards.

A third difficulty is the attitude of the medical profession. Those working exclusively in acute hospitals may see themselves as a superior breed who should not be troubled by the problems of those patients who obstinately refuse to get better within a month, or they may be interested mainly in their specialty. Whatever the reason, there is resistance to the incorporation of geriatric services into an acute hospital, which seems hardly justified when the complaint is so often heard that such and such a "chronic hospital" will not take

the chronic cases they wish to transfer. Surely the solution to this problem is to have the chronic beds under their own care and under the same roof as the acute cases. This is, of course, a problem which affects physicians more than it does surgeons, but the surgeons and orthopædic surgeons should be glad to have slow-stream beds in their own hospitals to which they could transfer patients by asking a physician to " see and take over ".

Then lastly there is the question of finance. Could such a scheme cost more than the present plan of segregation? I think that there would be certain savings in transport, duplication of case-records, and movements of staff. Expense might rise owing to the greater use of investigatory and treatment facilities for elderly patients, but this may prove an economy in the long view. Provided that we face the fact that the elderly, chronic, or subacute sick need to be nursed and treated in a different type of ward, with a different type of nursing staff, and that the physicians responsible realise that they must look at their patients with the low-power rather than the high-power of their minds' " microscope ", then there is no real reason why expenses should rise. Much will depend on the guiding influence of the physician-in-charge, and much will depend on a clear-headed outlook of the hospital management committee. It should be accepted, for example, that slow-stream beds could be closer together than acute beds; but day-room facilities are essential, and a few physiotherapeutic tools, such as walking-machines and parallel bars, should be kept close to the slow-stream wards, and not necessarily in the main physiotherapy department.

ADVANTAGES

If the integration of slow and fast stream medicine is accepted as a valuable policy for the future, there should be no difficulty in achieving the end, for the means are easily available. Already, by the sheer necessities of staff recruitment, the geriatric hospitals are developing acute wards, X-ray departments, and pathological laboratories so that a more interesting type of patient can be admitted and cured. It is only in this way that they can hope to recruit nursing and medical staff to care for the slow moving type of case. The next necessity is for the acute general hospitals to accept in their planning a provision for slow-stream wards to be run in parallel with their fast-stream wards. One medical team of two physicians should be able to staff two fast-stream wards of 30 beds each, and two slow-stream wards of 30–40 beds each, making a block of 120–140 beds.

By this scheme it should be possible to make the fast-stream wards really efficient with a high rate of turnover of cases, since any patient likely to block a bed, but no longer needing special facilities such as transfusion, can be transferred to the slow-stream ward where the emphasis is more on rehabilitation and liaison with social-welfare organisations than on the intricacies of modern treatment. The same physician should care for the patient throughout, so that he cannot regard the slow-stream ward as a " dump " for his less successful cases but as a place where illness is alleviated or managed as well as it can be. All new patients should be admitted first to the fast-stream ward, unless the diagnosis has been fully established before admission and the case is better dealt with in a slow-stream ward.

Such a policy of integration is probably acceptable to or accepted by regional hospital boards because they are well aware of the difficulties in recruiting staff to exclusively geriatric hospitals. My purpose is to raise the matter at medical level—to show the positive advantages to a physician in having acute and chronic beds under his care, and the improvements in turnover and standards of medical care which could follow from such integration. At nursing level, it is most important to appreciate the great differences between the care and treatment necessary for a young woman in an addisonian crisis (where the nurse must possess medical knowledge, skill, and great powers of observation) and the care and treatment of an 80-year-old lady with a hemiplegia, where all the old nursing virtues of good lifting, cleaning, and care and kindness must be brought into play and where often a devoted State enrolled assistant nurse will do better than a clever student nurse. Surely it is time to drop the segregation of S.R.N. trainees and S.E.A.N. trainees, and to recognise that both grades are necessary, useful, and capable of mixing together without harm to their professional standards.

If we can look at our medical patients and after diagnosis sort them into those requiring fast-stream and those requiring slow-stream management, I believe we shall do much to improve the efficiency of the medical care of the elderly—already so large a part of our work—and we shall correct the anomalies of the present system where it is often a matter of chance whether a patient occupies a bed in one hospital costing £25 a week for his treatment, or in another costing £12 a week.

I should like to thank Dr. G. C. Kelly, of the South Western Regional Hospital Board, for his helpful criticism.

Points of View

THE SEDATION AND STIMULATION OF MAN *

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PEOPLE with stress, tension, and irritability feel the need for sedatives, and those with fatigue, apathy, or boredom seek stimulation.

NEED FOR SEDATION

Stress.—The increase in the pace and complexity of civilised urban life can be easily blamed for any increase in nervous illnesses. To believe one is under stress or strain is easy and acceptable. Acceptable to doctors because it explains much that cannot be otherwise explained; acceptable to patients because it excuses much that could not otherwise be excused, and to drug houses because it provides a demand for drugs that would not otherwise be demanded. Yet we should not equate speed and complexity with stress and strain. Cavemen probably suffered as much strain over the problem of choosing the right cave as business men suffer today over choosing the right stocks and shares.

Tension.—By this vague word, I mean a sensation of inward excitement, but not pleasant excitement—akin to anxiety or apprehension, but with no awareness of what is apprehended. The patient with tension is waiting all the time for something important to happen: " I don't seem able to relax ".

I believe the increase of tension, too, is more apparent than real. Under different names, it has troubled men for

* Based on a paper read before the Section of Medicine of the Royal Society of Medicine on Jan. 28, 1958.

centuries; but now, by newspaper articles and advertisements, it has been made into a respectable symptom.

If there is any real increase in tension it may well be the result of tranquillisers, because their withdrawal encourages the symptom to develop.

Irritability is another symptom often treated by sedation. Caution is particularly necessary here because irritability may so easily be a manifestation of physical illness—thyrotoxicosis or peptic ulcer—and sedation may mask the underlying disease.

PHARMACOLOGICAL SEDATION

Two groups of drugs are used in sedation—hypnotics and tranquillisers.

Hypnotics are liable to produce a befuddled kind of sedation, and have the further disadvantage that psychoneurotics may save them up for half-hearted suicidal attempts. Moreover, people weak in character may become addicts.

Tranquillisers belong to four main groups:

The rauwolfia group.
The chlorpromazine group.
The benzhydrol group—azacyclonol, benactyzine, and others.
The muscular relaxants related to mephenesin, of which meprobamate is the most widely known, the most widely swallowed, and perhaps the most expensive of all the tranquillisers.

Each group has good points and disadvantages. The rauwolfia group may calm grossly disturbed psychotics but sometimes produces severe depression. The chlorpromazine group achieves dramatic results in some psychotics with gross excitement or tension, but has many side-effects including obstructive jaundice. The benzhydrol group are specific in combating the madness produced by the administration of lysergic acid or mescaline; but the treatment here should be to withhold these drugs rather than to neutralise their effects. Otherwise the benzhydrol group, on controlled testing, have shown little outstanding value. The last group, the muscular relaxant meprobramate compounds, have become the rage in America. Their tendency to produce addiction to larger and larger doses and their high cost (over twenty times that of amylobarbitone) mean that much caution must be used in prescribing them.

Every sedative drug has imperfections, and the search for the perfect one will continue—" since ", as Aldous Huxley remarks, " reality, however Utopian, is something from which people feel the need of taking pretty frequent holidays ".

OTHER MEANS OF SEDATION

But sedation is not by pharmacy alone. There are the social sedatives, tobacco and alcohol, which give rise to much pleasure but also much illness. There are physical means of sedation—massage, warmth, and appropriate sights and sounds, particularly those of a monotonous or repetitive kind (I have observed that housewives appear to achieve a kind of group sedative ecstasy when seated in rows watching their laundry gyrating interminably behind the portholes of a washing-machine.) For many people activity is the best sedative, and Kipling prescribed it for that common psychoneurosis—the hump. The sedative effect of music is well known to mothers singing their babies to sleep with a lullaby; and an interesting example of the use of sound in sedation is that of Sir Despard Murgatroyd in *Ruddigore*, who tranquillised his wife, whenever she was getting out of hand, by merely saying " Basingstoke, Basingstoke, my dear ".

Nevertheless, though sedation can be achieved with the use of drugs, heat, sight, or sound, it is more logical to quieten a mind directly than by stupefying its physical casing. Despair is best treated with hope, not dope. Psychotherapy is the basis of all sedation and the use of drugs must be subservient to it—a temporary measure to tide a patient through a critical phase, not a permanent requirement like insulin for diabetes. The technique of such psychotherapy is not easily taught. The secret of it is the art of listening—allowing disturbed patients to unburden their load of tribulations. Even though most of the burden has to be shouldered again after the interview, it is easier to bear if somebody else has seen how heavy it is. A problem is easier to countenance if it has been aired and put into words. I felt rather small recently when a father, thanking me for giving some psychological treatment to his son, said: " I think it's done him a lot of good being able to tell all his troubles to someone. When I was his age, I used to tell all my troubles to a large rubber duck, and it seemed a great help. I suppose you're much the same sort of thing." I had not previously considered myself as the therapeutic equivalent of a large rubber duck, and found it both humbling and enlightening.

Yet sedative psychotherapy is not achieved solely by listening. The doctor, however effective a rubber duck he may be, has to emit an occasional quack. Talking to patients or to their relations is an art that cannot be taught. Only experience and instinct will give a doctor the knowledge of when to probe and when to leave alone when to chide and when to reassure, when to speak and when to remain silent.

STIMULATION AND SEDATION

Most of what I have said about sedation applies again to stimulation. Stimulation can be achieved by drugs (ephedrines, amphetamines, and others); by social stimulants (tea and coffee); by physical means (cold baths); and finally by psychological means (stimulating music, stimulating conversation, and, very rarely, stimulating lectures or speeches).

One man's stimulus is another man's sedative, and the strictures that I mentioned earlier about sedatives apply to pharmacological stimulants. They too should be used only to tide a patient through a critical phase, not a permanent requirement like insulin for a diabetic. Today we often find sedatives and stimulants are being prescribed together both too lavishly and for too long.

Lately I saw a nervous young woman, who had been attending another hospital for several years. She was receiving: quinalbarbitone sodium gr. 3 twice daily, amylobarbitone sodium gr. 6 every night, and two capsules of prolonged-action amphetamine compound daily, together with one and a half hours' group therapy once weekly, and half an hour's individual psychiatric interviews twice a week. She was not any better!

Such extravagance can be expensive, dangerous and unhelpful.

Stimulants are necessary to savour the humdrum and to enliven the drab, but they must be used sparingly; overstimulated senses are less perceptive. The palate repeatedly soused with vinegar is less likely to enjoy the flavour of zambaglione.

The amount of stimulation available to modern man is increasing and has perhaps reached its apotheosis at Las Vegas, a city wholly dedicated to pleasure, boasting a twenty-four-hour service of every kind of entertainment and refreshment. Beside every hotel bed is a Bible and a free packet of ' No-Doze ' tablets. A notice reminds the visitor: " If you go to sleep in Las Vegas you are not pulling your weight. You are here to enjoy yourself. Help yourself to No-Doze tablets." Another

leaflet recommends suitable passages from the Bible for those who seek peace and tranquillity.

Perhaps one day the pharmaceutical firms will evolve the perfect drug. In Aldous Huxley's novel *Brave New World*, "soma" had all the advantages of both heroin and gin and none of the disadvantages. But some people may feel like the hero of that book did when he was encouraged by his mistress to take a dose. "I'd rather be myself", he said, "myself and nasty. Not somebody else, however jolly." I think such an attitude is the wisest one for man to take towards his own sedation and stimulation.

Occasional Survey

CARDIOTACHOMETRY

ONCE the thermionic-valve amplifier had been applied to the electrocardiograph, the era of the delicate and temperamental string galvanometer was almost over. Amplifiers have improved and new methods of recording the electrocardiogram (E.C.G.) have evolved, but the major advances of the last two decades have been clinical rather than technical, so it may seem surprising that instruments for the accurate recording of the heart-rate are only now emerging from the laboratory stage. Stable high-gain amplifiers have been available for some time, but those with a sufficiently large signal-to-noise ratio are a development of the past five or six years.

In 1952, Boyd and Eadie [1] published details of a cardiotachometer (C.T.) for use with decerebrate or anæsthetised animals; some of the more interesting features of its design have already been noted.[2] Two years later,[3] the same workers described a new instrument for continuously recording the heart-rate of a patient either lying at rest in bed or else carrying out controlled exercises while standing. Boyd and Eadie found that, in spite of the experience gained with the earlier C.T., many new difficulties arose, and in their article, which includes a valuable list of references to earlier work, they discuss the various means adopted to overcome them.

Essentially, a C.T. consists of a transducer which produces an electrical signal for each heart beat; this signal, the pulse wave, which may come from heart-sounds or the E.C.G., is fed to a wave-shaping circuit which provides an impulse of constant amplitude for each beat. A further circuit integrates these impulses with respect to time and supplies the necessary output for a visual indicator—usually a specially calibrated voltmeter, or else a graphic recorder.

TRANSDUCERS

There are many different forms of transducer, each with its advantages and drawbacks. The impedance plethysmograph [4 5] measures the change in impedance to radio-frequency current in a limb as the amount of blood varies between systole and diastole, and could furnish the required input to trigger a wave-shaping circuit. However, since muscle movements affect the blood-volume between the electrodes, the impedance plethysmograph is of little value unless the subject is at rest.

An adaptation of the photoelectric oximeter, first described by Millikan,[6] could be used—as also could a photoelectric cell operating with light of a suitable wavelength reflected from the skin. Unfortunately, the oximeter is heavy and uncomfortable, and even if it were possible to use the tiny photo-transistors now obtainable, its utility would be restricted since the cases in which the C.T. is most needed are often those in which the output of the heart is greatly diminished, either from disease or during some surgical procedure.

A microphone on the chest wall or on the side of the neck will give a large enough output, but, once again, its use is confined to patients at rest, because extraneous noises and sounds from the friction of clothing add many artefacts to the signal. The thermionic transducer is more sensitive than the conventional microphone, and its signal would need less amplification, but it is costly and equally affected by unwanted sounds.

ELECTRICAL INTERFERENCE AND ITS ELIMINATION

In man, the R wave of the E.C.G. in lead II has an amplitude of between 0·4 and 2·3 millivolts (mV)—about ten times that of the P wave, which Boyd and Eadie used in their original C.T.—and can, under ideal conditions and after pre-amplification, provide an excellent triggering signal for a wave-shaping circuit. However, when the subject moves about, the sharp spike of the R wave disappears in a mass of interfering potentials of various frequencies and amplitudes. The wave-form as actually picked up includes the E.C.G. itself, muscle action potentials with an amplitude of 10 mV or more, 50 cycles a second interference of up to 750 mV from electrical wiring, and, perhaps, diathermy and X-ray interference of any frequency and amplitude. In addition, there are various zero frequency potentials derived from electrochemical action in or under the skin or in the materials of the electrodes, and from the skin of anyone touching the patient. This sounds a formidable list, but as Parker et al.[7] showed a few years ago, much of the interference can be eliminated by use of some of the recognised "tricks" of the electronics engineer. In their radio-electrophysiologograph they used a small frequency-modulated transmitter, the signal from which was picked up by a receiver equipped with a number of analyser filters. It was necessarily a complicated instrument—though ideal for the investigations for which it was designed—and its proper functioning depended a great deal on the electrostatic condition of the atmosphere.

A capacitance-coupled amplifier is unaffected by zero frequency potentials; trouble may arise from the amplifier "blocking" from voltage transients arising from movements of the electrodes, but this can be minimised by careful electrode design. Boyd and Eadie [3] found that screening and filtering would eliminate most of the other interference, but that muscle activity was still troublesome. In the first version of their human C.T. they used a selective amplifier, resonant at 6 cycles a second; unfortunately, the circuit was unstable at this low frequency. The second C.T. incorporated a triode phase-shift oscillator which proved both simple and reliable. It is possible for the T wave to trigger this, or any other circuit with a good response at about 6 cycles a second, and so cause "double counting". If, however, the wave-shaper is provided with the electronic equivalent of the refractory period of a nerve, it can be rendered

1. Boyd, W. E., Eadie, W. R. *Electron. Engng*, 1952, **24**, 102.
2. *Lancet*, 1952, i, 705.
3. Boyd, W. E., Eadie, W. R. *Electron. Engng*, 1954, **26**, 330.
4. Nyboer, J., Bagno, S., Barnett, A., Halsey, R. H. *J. clin. Invest.* 1940, **19**, 753.
5. Nyboer, J., *in* Medical Physics, edited by O. Glasser. Chicago, 1944.
6. Millikan, G. A. *Rev. Sci. Instrum.* 1942, **13**, 434.
7. Parker, C. S., Breakell, C. C., Christopherson, F. *Lancet*, 1953, i, 1285.

unresponsive until the arrival of the next R wave. The Q-T interval may be estimated [8] from the expression: $Q\text{-}T = 0{\cdot}385\sqrt{C}$, where C is the interval between successive beats. Ordinarily, the Q-T interval lies between 0·3 and 0·4 second, but some form of variable delay is desirable to deal with the range which may be found in clinical practice. Visual indicators, in the shape of miniature cathode-ray tubes (the "magic eye" tuning indicators of radio sets) are a useful addition to the C.T.—one to show the arrival of the R wave, and the other to show the output from the integrator.

ELECTRODE DESIGN

Boyd and Eadie [9] describe the types of electrodes which they found most reliable. In an anæsthetised patient, ordinary needle electrodes inserted in the chest wall were the best; for a conscious patient, a chest electrode (preferably earthed) and an electrode on the left leg gave the most satisfactory results. A form of electrode, which might be even better for some investigations, has been perfected in the Psychological Research Laboratory of Electrical and Musical Industries,[9] for research in electro-oculography where potential differences of the order of 20 microvolts have to be detected and measured. The electrodes are of high-purity silver, kept as free as possible from all contamination. Contact is made to the inner skin, after the epidermis has been removed with a dental burr; the operation is painless and penetration is too shallow to cause bleeding. The electrodes are held in place by suction-cups filled with saline solution, thus eliminating the various zero frequency potentials in the electrodes themselves and on the skin.

In 1956, Manzotti [10] published details of another T.C. circuit. He eliminated muscle-potential interference by using a band-pass filter, centred on a frequency of 12 cycles a second; the design is rather critical, as such circuits tend to "ring" unless heavily damped, and damping reduces the upper limit of the counting-rate. Mains interference was removed by using a balanced amplifier to provide degeneration of any signal which appeared symmetrically in each input lead.

An entirely new C.T. circuit has been devised by the staff of the Clothing and Stores Experimental Establishment of the Ministry of Supply. First shown publicly at the Instruments, Electronics, and Automation Exhibition at Olympia last May, it is a telemetering system effective over a distance of up to half a mile, intended to measure the heart-rate during violent physical exercise, such as negotiating an assault course. Electrode and muscle action potentials are got rid of by sampling and amplifying the electrical activity from three different areas of the body. These amplified outputs are fed to a coincidence circuit, so that only the activity common to all channels—namely that of the heart—is accepted and used to pulse a transmitter. Although muscle-action potentials are large and there must be some movement of the electrodes, the transmitter will produce a clean pulse for each heart beat, at rates up to 100 beats a minute. The complication of three gating circuits is well worth while, because low-frequency filters and tuned circuits are unnecessary. No form of integrator was fitted to the prototype C.T., the rate being determined by counting the transmitter pulses as heard over a loudspeaker, or as displayed on a cathode-ray tube. The pulses may be recorded on tape, together with a commentary on the activities of the subject. A miniaturised version of the transmitter, small enough to go in a soldier's pack, is under development. There is no reason why this particular instrument should be confined to cardiotachometry—various other physiological measurements, such as body-temperature or vapour pressure, could be transmitted—and it could be of great value in studies of industrial fatigue.

8. Lorenz, E., Weikel, J., Norton, S. G. *Rev. Sci. Instrum.* 1946, **17**, 276.
9. *Electronic and Radio Engineer*, 1957, **34**, 140.
10. Manzotti, M. *Electron. Engng*, 1956, **28**, 446.

ELECTRONIC CIRCUITS AND EXPLOSION RISKS

During an investigation of heat-production in electronic apparatus, Shaw [11] found that the glass envelope of a miniature valve, dissipating 10 or 12 watts, might be as hot as 250°C, and that temperatures of 150°C to 180°C are customary when the valve and its associated equipment are enclosed in a case whose cooling arrangements have been arrived at by the usual rule-of-thumb methods. As the Report of the Working Party on Anæsthetic Explosions [12] recommended that 149°C should be the maximum temperature of exposed surfaces in potentially explosive atmospheres, there is a risk attached to the use of electronic instruments in such surroundings. Heavy, gas-tight instrument-cases are not satisfactory; temperatures in them are bound to be high and circuit components deteriorate rapidly, and stability—an essential in high-gain amplifiers—suffers accordingly. Since most valves operate at anode potentials of 250 volts or more, another source of danger, especially with capacitative circuits, is that a break in the high-tension line or the opening of a switch may produce a vicious arc even though the current flowing may be no more than a few milliamps.

TRANSISTORISED CIRCUITS

Junction transistors are small, remain cold, work at low voltages, and draw minute currents: circuits using them are inherently safe in the presence of flammable or explosive vapours and gases. The first "transistorised" C.T. was described by Molyneux [13] three years ago, and he has since published details of an improved model.[14] Although carrying out many of the same functions, valves and transistors are not directly interchangeable, and the amplifier of Molyneux's instrument differs from that of a valve-operated C.T.; since transistors are particularly sensitive to changes in ambient temperature, a compensating circuit has to be included. The amplifier has a pass-band of 10–14 cycles a second, and stringent tests have shown that "double counting" will take place only when the subject carries out really energetic movements. Because of the slow response of the integrator—a matter which will be discussed later—the C.T. incorporates a transistor oscillator to produce an audible signal for each heart beat, so that the onset of any irregularity may be detected immediately. Electrical interference is kept to a minimum by the use of a wooden case and a wooden chassis. A small dry battery is enough for forty hours' use before any sensible change takes place in the calibration. The instrument has a high input impedance—80 kilohms—so that it can be used in parallel with a standard electrocardiograph without affecting the appearance of the trace.

FŒTAL HEART-RATE RECORDING

The recording of the fœtal heart-rate presents some special difficulties, and what is believed to be the first

11. Shaw, E. N. *ibid.* 1957, **29**, 13, 65, 115.
12. *Report of a Working Party on Anæsthetic Explosions;* p. 29. H.M. Stationery Office, 1956.
13. Molyneux, L. *Brit. J. Anæsth.* 1955, **27**, 262.
14. Molyneux, L. *Electron. Engng*, 1957, **29**, 125.

fœtal C.T. was described by Smith [15] about a year ago. Heart-sounds had to be relied upon, as it proved impossible to separate the electrical potentials of the maternal heart beat from those of the fœtus. Smith admits that the instrument is not perfect, but his results were encouraging, as it proved possible to record the fœtal heart-rate over a number of hours and even during the final stages of labour. A sensitive vibration pick-up was strapped to the abdominal wall over the point where the fœtal heart-sounds could be heard most clearly. There was no interference from the heart-sounds of the mother, and, in twin pregnancies, it proved easy to pick up an interference-free signal from each fœtus. The output from the microphone is fed to an amplifier with a voltage gain of 10^6 and a pass-band of 60–80 cycles a second; this amplifier has special characteristics to discriminate against digestion noises and uterine souffles. The heart-rate is displayed as a trace on a graphic recorder.

The only serious interference came from clothes and blankets rubbing against the microphone; the high noise levels of hospital wards and labour rooms gave no trouble, and any spurious pulses caused by fœtal movement were too short in duration to affect the instrument. Interference with the record from movements of the patient during labour was unavoidable, but careful supervision enabled these artefacts to be recognised.

Although not strictly a cardiotachometer, as it does not include any form of integrating circuit, a fœtal phonocardiograph described by Dewhurst and Mainland [16] has several interesting features intended to deal with a specific problem—namely, the determination of the presence of the fœtal heart sounds. As Wood [17] pointed out a few years ago, the fundamental frequency of the fœtal heart-sound is about 16 cycles a second; varying proportions of higher harmonics are usually, but not always, present.[18] Since the fundamental frequency is below the limit of audibility, the output from the phonocardiograph is fed to a graphic recorder, though a headphone responding to the higher harmonics is provided for placing the microphone. An integrator was thought unnecessary as the phonocardiograph is intended purely for diagnostic purposes after the twentieth week of pregnancy. The fœtal heart-sounds are picked by a crystal microphone, loaded to give a peak response at 25 cycles a second, in contract with the mother's abdomen. The high-frequency response of the amplifier, which has a usable gain of 2×10^6, is purposely limited to render it insensitive to outside noises. The fœtal heart-rate of 120–160 beats a minute falls just within the limits of the upper frequency response of a slightly modified commercial E.C.G. recorder.

INTEGRATING CIRCUITS

The slow response of an electronic integrator, while sometimes adequate for physiological research, is often inconvenient for clinical use where an immediate indication of a change in heart-rate can be of vital importance. Manzotti [19] suggests that an accuracy of ± 2 beats would be reasonable in an integrator in which 30 beats would be needed to reach 90% of a variation consisting of a sudden jump in the heart-rate from 60 to 120 beats a minute. But when other physiological phenomena must be correlated with the heart-rate, the circuit must record it instantaneously, and must therefore give, at every beat, a signal proportional to the reciprocal of the time interval between that beat and the preceding one. In Manzotti's C.T., the computing circuit releases a constantly delayed signal for every R wave. This signal displays, on the Y axis of a cathode-ray tube, a potential that decays hyperbolically and is therefore proportional to 1/time. The electron beam is cut off except for the time between the R wave and its delayed signal, just at the end of the R-R interval; hence a dot can be recorded photographically which—provided the delay has been properly chosen—has an ordinate proportional to the heart-rate, as computed on the R-R time interval.

At about the same time as Manzotti, Wyatt [19] described a heart-rate meter which could register 99% of the true rate in three seconds. He has lately produced an instrument with an even better response.[20] The heart-rate is indicated on a specially calibrated microammeter and is accurate to $\pm 2\%$. This performance has been attained only at the expense of considerable complexity which would probably preclude the use of the instrument outside the laboratory.

Technical finality has clearly not yet been reached in C.T. design. The gated amplifier of the Clothing and Stores Experimental Establishment design seems to have great promise, especially if it could be followed by an integrator with a quick response giving a visual numerical display on the lines of various scalers and counters now produced commercially for counting atomic disintegrations.

15. Smith, D. H. *ibid.* p. 132.
16. Dewhurst, D. J., Mainland, J. F. *ibid.* p. 340.
17. Wood, M. C. *ibid.* 1953, **25**, 90.
18. Gunn, A. L., Wood, M. C. *Proc. R. Soc. Med.* 1953, **46**, 85.
19. Wyatt, D. G. *J. sci. Instrum.* 1956, **33**, 440.
20. Wyatt, D. G. *Electron. Engng*, 1957, **29**, 336.

Public Health

PESTICIDES

NEW pesticides may be poisonous, not only to persons engaged in their formulation, manufacture, and application, but also to the public who consume products treated with them. The problem of protection has been dealt with by different methods in different countries.

In the U.S.A. the Food and Drug Administration (F.D.A.) is responsible for advising manufacturers about new substances, including pesticides, and establishes limits for the amounts of any added material which may remain in food as residue from spraying or other treatment. It has power to seize and examine food to ensure that regulations are not infringed. In Great Britain control depends largely on voluntary cooperation between the pesticide industry and Government Departments.

Negotiation between the industry (represented by the Association of British Insecticide Manufacturers) and the Ministries of Health and of Agriculture, Fisheries, and Food has led to agreement on a procedure whereby the manufacturer or distributor of a new pesticide, or of a new formulation of a known pesticide, gives notice voluntarily of the intention to market the new product, together with the fullest possible particulars of its properties and use, so that Government Departments may advise on measures to protect both workers and consumers. The resulting recommendations do not have the force of law.

The data are considered by an advisory committee (set up by the Government in 1956) and a scientific subcommittee, which comprise representatives from the Ministry of Agriculture, the Department of Agriculture for Scotland, the Department of Health for Scotland, the

Ministry of Health, the Agricultural Research Council, the Medical Research Council, the Government Chemist's department, the Board of Trade, and the Nature Conservancy. The advisory committee recommends whether or not a substance should be included under the Agriculture (Poisonous Substances) Regulations, and, in the case of substances not included, it may make recommendations for the safety of users and invite manufacturers to include on their label the appropriate voluntary precautions. The consumer is protected by recommendations regarding dosage of material to crops and stored products, method and frequency of application, and the interval between application and harvesting. The risks to livestock and wild life are also considered.

Hazard to the consumer is hard to assess. It is practically impossible to prove that any substance is harmless, and the committee must decide whether a few parts per million of a toxic substance ingested daily for a lifetime by a whole population is likely to harm individuals or the population as a whole. It is not surprising that the committee is content to say that, subject to conditions described in the recommendations, a material "should present no hazard to consumers". So far, no cases of illness have been recorded as a result of eating food treated with any pesticide according to accepted methods; but accidental poisoning occurs from time to time. For instance, Davies and Lewis [1] reported that a number of people ate bread made from flour contaminated during transport by 'Endrin', a chlorinated hydrocarbon type of insecticide. In the U.S.A. dicophane (D.D.T.) has been detected in the fat of persons who had had no occupational exposure to this substance, which was apparently ingested in food. There is no evidence that the presence of as much as 20 parts per million in the fat gives rise to any symptoms.[2] Whether it is desirable to treat food with substances which can accumulate in the tissues of man and animals is another matter, and must be assessed in relation to the benefits of the increased food production that has resulted from the use of pesticides.

It is easier to advise on measures for protecting persons using pesticides, and where necessary to enforce these by legislation. The Agriculture (Poisonous Substances) Act, 1952, was designed to make compulsory certain provisions for the protection of persons using toxic chemical substances in agriculture and horticulture.

The committee has recommended the addition, to substances scheduled under the Act, of fluoracetamide formulated at a strength greater than 1% active ingredient, and the alkali arsenites. With regard to the latter substances it recommends that the Agriculture (Poisonous Substances) Regulations should be amended to prescribe that workers who handle potato plants which have been sprayed with arsenites within the preceding ten days must wear suitable protective clothing.[3]

Organo-mercury compounds used as aerosols in greenhouses already come under the regulations. The current recommendation with regard to organo-mercury dry-seed dressings may need to be amended. The committee has agreed that organo-mercury compounds with a vapour pressure not greater than that of ethyl mercury chloride when used alone, or as a component of dry-seed dressings, need not be included in the regulations. Ethyl mercury chloride is approximately as volatile as metallic mercury.[4] It is therefore volatile at room temperature, and the volatility will increase as the temperature rises. The maximum allowable concentration of inorganic mercury is accepted as 100μg. per c.m. of air, and Ahlmark [5] recommended that the upper limit for organo-mercury compounds should be 10 μg. per c.m. In the case of the dry dressing of seeds a potential risk exists, not only from vaporisation of the organo-mercury compound, but also from the presence in the working atmosphere of dust of small-particle size. It is difficult to believe that the concentration present in the atmosphere will be less than 10 μg. per c.m. Poisoning by organo-mercury compounds causes selective damage to the central nervous system which may lead to permanent disability or death. In the reported cases the most serious effects have resulted from contact from ethyl or methyl derivatives, and laboratory workers as well as those engaged in the manufacture and use of these materials have been affected.[6]

Seed-dressing stations where organo-mercurial dusts are used are subject to the regulations of the Factories Acts (1937) and protection of workers in these places should be adequate, but some seed-dressing is done in less favourable conditions. If the committee's advice to agricultural workers handling seed treated with organo-mercury dry dressings is followed, the hazard should be slight, but since voluntary precautions are sometimes ignored it may become necessary to make the precautions obligatory. In the recommendations for protection of consumers, the suggestion that "sacks which have contained dressed seed must be well shaken" is surely bad advice unless the person doing the shaking and those in the vicinity are adequately protected.

Antibiotics are being used on an increasing scale for food preservation. Recommendations are made for one of these, 'Griseofulvin', for which no special precautions for the operator appear to be necessary.

The experience of one employer showed that in men using 'Diazinon', an organo-phosphorus compound of low toxicity, the plasma-cholinesterase decreased even though they wore protective clothing which included gloves. Investigations suggest that, possibly because of solvents or other additives, gloves may not remain impervious to organo-phosphorus compounds, and enough may be absorbed through the gloves to depress cholinesterase activity.

1. Davies, G. M., Lewis, I. *Brit. med. J.* 1956, ii, 393.
2. Hayes, W. J., Durham, W. F., Cueto, C. *J. Amer. med. Ass.* 1956, **162**, 890.
3. See Whitehead, T. P. *Lancet*, 1957, ii, 953; annotation, *ibid*, p. 1047.
4. Charnley, T., Skinner, H. A. *J. chem. Soc.* 1951, **2**, 1921.
5. Ahlmark, A. *Brit. J. industr. Med.* 1948, **5**, 117.
6. Swensson, A. *Acta med. scand.* 1952, **143**, 368.
7. See *Lancet*, April 26, 1958, p. 906.
8. *Birmingham Post*, April 21.
9. *Mon. Bull. Minist. Hlth Lab. Serv.* 1958, **18**, 76.

Smallpox in the Wirral

When smallpox was diagnosed in the boy aged 2 living in New Ferry,[7] his grandmother and sister were vaccinated on April 14. The grandmother, who had been vaccinated only in infancy, had a primary take. She became feverish on Monday, April 21, and on the Wednesday evening a discrete palpable macular rash appeared on her trunk and limbs. The rash became morbilliform on Thursday, and papules appeared on the limbs on Friday. The sister, who had not been vaccinated before, also had a primary take. She became feverish on Tuesday, April 22, and on the Friday, when her temperature settled, a few papules appeared on her limbs, forehead, and neck. Neither patient is generally ill, but both have been admitted to New Ferry Smallpox Hospital; smallpox virus has been isolated from scrapings from the lesions. The Indian seaman at the hospital has recovered, except for a few lesions on his feet thought to be infective.

Arsenic and Lead on Apples

Public-health inspectors at Coventry recently found traces of lead and arsenic on the skins and stems of two batches of apples from the Lebanon.[8] The contamination is thought to have been caused by a pesticide spray. The Ministry of Health reports [9] that the trade has cooperated in safeguarding against this hazard in apples from certain Mediterranean and Middle East countries by having the contaminated fruit washed; but some such fruit may have escaped detection. "The elementary hygienic practice of washing all fruit before eating affords adequate protection from any hazard to the consumer: peeling and coring provide an additional safeguard."

In England Now

A Running Commentary by Peripatetic Correspondents

I HAD prided myself on being perhaps the first doctor in Britain to use nylon syringes. They proved invaluable and the breakage-rate dropped to zero almost overnight. The pleasure of having syringes which bounced was never-ending. Now I may prove to be the first to give them up.

At the end of my new secretary's afternoon duties she left the place tidy for evening consultations, with one nylon syringe on the steriliser and five inside. Those who, a few hours later, met all the dark smoke filling the rooms and corridors thought at first that the house was on fire. The five syringes have gone—are nowhere. But the inside surfaces of the steriliser and the edges of its lid bear a thick hard coating of glossy black. The nearby walls and ceiling look even more off-white than before. For strength and tenacity let me recommend distilled nylon. Hours of scrubbing and every solvent the dispensary, the kitchen, and even the garage could produce have made a quite tiny impression on the dark layer. My secretary and I reckon that with diligence and detergents the steriliser may be clear by Christmas.

My unhappy wife cannot rid our house of its new odour. It reminds me of those window-jammed homes I hate to visit; the sort of house into which I do not take my hat lest I have to put it down on one of its uninviting surfaces. The modern-minded women among my patients say that they are familiar with the new odour of the professional rooms. Yes, as they give their little disgusted domesticated sniffs, yes, they had met it when the iron was too hot for their nylon frilleries. The material under the iron just disappeared, or rather was converted into slight stickiness of the iron plus a smell. I have even been told of a girl who wore her nylon nightgown too close to a fire and suddenly, without flame, found herself naked.

My syringes have gone; but oh, how their memory lingers on!

• • •

I am glad to see that the new edition of *Martindale* retains my old friend the Chelsea Pensioner. I found this versatile old soldier several editions ago quite by chance. He has lent his name to Confectio Guaici Composita, which must be a carminative of remarkable power if the synonym is to be believed. One day I must write:

℞ Conf. Chelsea Pensioner
Mitte ℥ii N.P.

That should lift a few eyebrows if nothing else.

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Clearing out the attic I found some old medical objects of my grandfather's, and rather than throw them away I offered them to a dealer.

After handling one in a cursory manner, his speculative eyes slowly looked me up and down. "You are a medical man, I presume?" I nodded agreeably and awaited identification of the article. He wheeled round, stuck his head into the hatchway, and shouted, "Did you hear that, Bert? Medical gentleman here never heard of a fleam—and a three-bladed one, too!" He was answered by a raucous Cockney yell of derision from the vaults below. Having thus drained me of confidence, he continued briskly: "Now, sir—these articles—kindly name your price." I ventured 2 guineas. After all, my Green Line fare to Church Street was 7*s.* 6*d.* "I'm afraid you are wasting our time, sir. 17*s.* 6*d.*," he snapped and made to move away. I disliked the thought of approaching another dealer, and, after I had pocketed the handful of silver, he became more expansive. Slowly sucking his yellow teeth, he sighed. "Of course, I shall have to clean them up . . . and another nuisance, you've lost the locking nut for the Tribulcon. Bert," he roared, "fix this hinge and tell me if it's a Tribulcon or an Alphonsine."

My ignorance apparently offended him, but taking a firm grip on his patience and speaking slowly, he explained. "The early Napoleonic bullet-extractor was called an Alphonsine after some surgeon-general. The Tribulcon was a bit earlier. Both damaged the tissues more than the bullet. Now, I believe this here is a Freeke's tourniquet of about 1820—you've ruined the cog-and-wheel mechanism—and the handle to tighten the band is very loose. They were never satisfactory. I ought to ask you for my money back. This sort of blow-lamp is an early antiseptic steam-spray producer." My heart sank as he exhaled on the name-plate and, with a vigorous rub, disclosed with fearful clarity *for Prof. Lister by J. Gardner instr. mkr. Edin.*

"What a pity you haven't got the scarifier," he sighed, as he prised open the small silver box from which two rusty needles fell out. "It could be a Jenner—probably not an original, though *E. Jenner, Sgn., Berkely*, looks faint and genuine enough." He smiled whimsically as his eye caught the fleam again and he was just about to laugh in my face when he braced himself to say, in a censorious tone, "Junk—sheer junk! Top prices paid and I still have to make an honest living." He poked at the heap in mock reproach with a dirty fingernail. "Oh well, I suppose the private collectors and the museums will fight for them." His tone was tinged with triumph and I was halfway through the door before he remembered to cry, "Have you any more? Top prices . . ." But I waited no longer and, retiring to the nearest espresso, pondered over a cup of black coffee on my amazing ignorance.

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Your peripatetic tale about the lost bicycle pedal reminds me of my failure in World War I to interest the powers that be in the great saving of steel that could be effected by providing members of mounted regiments and others wearing spurs—e.g., G.O.C. London Command and some others of the Military Police—with only one spur instead of two. The argument, based on anatomy, is of course that if you get one side of the horse going in the right direction, the other side of the horse will go the same way. And what's wrong with that, I ask you? Alas, I couldn't induce any general to think that he thought of it first. And so it wasn't done.

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Pop was moved into the sideward of the female surgical ward with certain misgivings. It had been used for men before but each occasion had produced such a violent reaction in the sister that we had sworn never to repeat the practice. Pop, also, was probably not going to be the easiest patient to nurse, for he was to have his remaining leg amputated because of senile gangrene.

Surprises were not long in coming. The next morning on the round we were told that he was "a dear". The afternoon before he had asked the librarian for a book by "that Dickens chap", and since then he has read several of this author's larger tomes, which by the look of them had not been off the shelf for many dusty years. The delay in healing of his stump, while not being surgically satisfactory, has proved so socially to the sister—"The first man I've had in there whom I can tolerate"—and his protracted convalescence has helped his family through the recent cold spell. Mum comes in with a cheery "Well, Dad, how are you today?" and the interchange of news goes on for about five minutes. After this the comfortable armchair by the fire is amply filled and Mum dozes off leaving the rest of the conversation to her daughter. Wednesdays, Saturdays, and Sundays are the best days because really it does take longer than twenty-five minutes to get warm right through.

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Letter from a mother-to-be to her G.P.:

During the past few months I have consulted many experts about the safest way to have a baby. Some say this, some say that. Some induce, some wait. Some are for Cæsarean, some are for forceps, some are for trial. Some weigh. Some give salt, some say it's poison. Some transfuse, some don't. Some say it's dangerous to have a baby in hospital because of sepsis, others that it is dangerous to have a baby at home because of lack of asepsis. What *is* a poor woman to do?

The G.P.'s reply:

Get a good midwife to hold your hand and rub your back—that *is* essential.

Thank God my rhesus-negative wife produced our four yellow babies 13 to 20 years ago—in ignorance of what the experts think is the "safest way". Either she or I would have died of anxiety, and I'm not sure we should now have four rather nice children.

Letters to the Editor

CEREBRAL PALSY

SIR,—Your leader of April 19 raises a number of questions, the most fundamental of which is that of definition. To define "cerebral palsy" is important, not only because people with it have "certain needs in common", but as an essential preliminary to research and exchange of information. It is also essential that any definition is acceptable equally to neurologists, pædiatricians, and others and that they adhere to it in discussing the topic.

There are certain points which your definition of "cerebral palsy" as "a congenital motor deficiency that is not progressive" does not make clear. Are we to include "motor deficiency" caused by congenital lesions of the cord, nerves, muscles, bones, and joints? Are we to exclude disorders acquired in the neonatal period, such as those following severe jaundice of the newborn? Is the "motor deficiency" always, or even frequently, congenital—that is, present at birth? Is the "motor deficiency" never progressive? (What is not progressive is the lesion; its signs and symptoms change with development as emerging functions interact with older dysfunction). Is "motor deficiency" appropriate for cases which essentially show unwanted movements?

To define "cerebral palsy" cannot be easy, for the cases it includes are not all identical. In trying to arrive at a useful definition of cerebral palsy certain points need to be considered.

(1) It is a palsy or *motor disorder*.

(2) It is the result of a lesion of the *brain*.

(3) Only disorders resulting from *non-progressive lesions* are to be included.

(4) The damage of the brain may be from intrinsically or extrinsically caused development disorder (occurring in fœtal life or after birth) or may be perinatal, paranatal, or postnatal in origin.

(5) The moment of birth as a criterion in definition has little usefulness, for birth is only an incident in the long course of prenatal and postnatal development of the nervous system. What is important is the stage of development of the child at which the damage responsible for the motor disorder occurs; the word development here implying that of the intellect and personality as well as of the central nervous system.

During the past year a number of interested people have met at the Little Club to discuss a memorandum on the terminology and classification of "cerebral palsy". The memorandum is not final but it seems worth while to set out below the definition of "cerebral palsy" arrived at together with its explanatory footnotes. The participants in the discussions were Dr. N. S. Alcock, Dr. J. Bates, Dr. E. A. Carmichael, Dr. J. Crosland, Dr. P. R. Evans, Dr. M. C. Joseph, Dr. M. J. McArdle, Dr. D. McDonald, Dr. I. C. K. Mackenzie, Prof. A. A. Moncrieff, Sir Charles Symonds, and the undersigned.

R. C. MAC KEITH
P. E. POLANI.

London, S.E.1.

DEFINITION OF "CEREBRAL PALSY"

In the present state of our knowledge the term "cerebral palsy" [1] is taken to imply a persisting qualitative motor disorder [2] due to non-progressive [3] damage [4] of the encephalon [5] occurring before the growth of the central nervous system is complete. Because the cases it includes are not all identical from clinical, ætiological, and morbid anatomical aspects, the term "cerebral palsy" is not an exact one. In scientific usage, as we learn more about each, the names of individual disease entities within the group should be used. Meanwhile, however, for research purposes the term "cerebral palsy" is useful in the study of a group of conditions often of obscure origin affecting the brain and arising in early life. A strict definition is necessary and should be adhered to if the term is to be used for research and in the exchange of information.

On the other hand, in common usage the term has administrative usefulness and a practical value largely because the affected children often have certain special motor, intellectual, and emotional difficulties in common and so have certain special therapeutic and educational needs. The effect on a child of a motor handicap of cerebral origin, present from very early in his development, is very different from that of a similar disorder occurring later. For the purposes of definition a time limit has to be fixed. The definition of "cerebral palsy" therefore proposed is:

> a persisting qualitative motor disorder appearing before the age of three years, due to a non-progressive damage of the brain.

SIR,—In the two articles and the leader in your issue of April 19 only the briefest mention is made of the place of surgery in the treatment of limb deformity. Out of some 10,000 words less than 200 were used to discuss surgical treatment and these mostly to describe a single case of an operation for flexion contracture of the knees.

The repeated disappointments which followed operations in the past and in particular the misadventure of Royle's sympathectomies caused such gloom to surround the value of surgery for the correction of limb deformities in cerebral palsy that there are today undoubtedly many patients of good intelligence and personality who struggle about with grotesque skeletal deformities such as would not be tolerated in almost any other disease.

Dr. Palmer states that he has no doubt that "there is a place for surgery in the adult spastic, but this must be very carefully considered beforehand . . .". But the need for careful consideration of an operation should not act as a bar. The planning of an operation is no problem special to cerebral palsy, but is called for in the judgment of any reconstructive operation, whether it be for hallux valgus or for the improvement of an osteoarthritic hip-joint.

There is no doubt that much can already be done by operations to assist many patients suffering from limb deformities consequent upon cerebral palsy, and much can be learnt by carefully planned and staged procedures, but this is not the place to discuss these in detail.

What is now urgently needed is a *systematic* programme to study the possibilities and limitations of surgical methods for the relief of limb deformities in cerebral palsy, which could in time produce results comparable to those achieved in dealing with the effects of poliomyelitis. It is to be hoped that the programme of vaccination against poliomyelitis will release the surgical skills and time for this purpose in the not too distant future. Some start should now be made.

LIPMANN KESSEL.

London, W.1.

1. The adjective infantile before "cerebral palsy" is not considered to be necessary as the term has no place in the neurology of adults.
2. This excludes such quantitative disorders of movement as might be met with in mental defectives.
3. The clinical evolution with the passage of time seen in cases of "cerebral palsy" has usually been explained by nervous system growth and maturation with the resulting emergence of new functions and their interaction with old deficits. Some workers think this explanation inadequate and suggest that some of the changes in clinical findings could be ascribed to progressive pathological lesions.
4. The damage of the brain may be from intrinsically or extrinsically caused development disorder (occurring in fœtal life or after birth) or may be perinatal, paranatal, or postnatal in origin.
5. The brain, that portion of the central nervous system above the foramen magnum.

SIR,—In your leader of April 19 you refer to the excellent work of our two national societies in the field of cerebral palsy.

We think your readers may be interested to know that the medical advisory committees of the two societies recently met, under the chairmanship of Professor Moncrieff, to discuss some common medical problems and it is proposed to hold similar meetings from time to time. The two societies are also planning to appoint a joint educational advisory committee. We believe that the welfare of spastics and the work of both societies will benefit considerably from such joint meetings and discussions on matters of common concern.

13, Suffolk Street, Haymarket, London, S.W.1. D. E. WHEELER
Chairman of Executive Committee, British Council for the Welfare of Spastics.

28, Fitzroy Square, London, W.1. I. D. DAWSON SHEPHERD
Chairman of the National Spastics Society.

"THESE DYING DISEASES"

SIR,—With the first few words of Dr. Vickers' letter (April 19) I agree. Mr. King's article was timely and should be taken to heart by those who are responsible for anti-venereal arrangements in this country. To those with sufficient knowledge to understand the implication of the facts Mr. King has brought to notice, the prospects of combating venereal disease in this country must appear indeed gloomy. He has shown a steady rise in antibiotic-resistant gonorrhœa and of non-gonococcal urethritis, which is doubtless becoming increasingly resistant to the antibiotics being, often blindly, lavished upon it. And all these diseases are being spread at a greater rate than formerly by reason of the greater invasion of the country by immigrants.

These alone are sufficient to merit grave concern. As regards syphilis, Mr. King has pointed out a possible fallacy in the inference to be drawn from the figures relating to new cases seen at the clinics when he says:

> "The main antisyphilitic remedy is used freely for many other conditions. Possibly this helps to prevent the late serious effects of syphilis, but it may suppress information which would help us to estimate the extent of the problem."

We may, in fact, be in a fool's paradise in respect of this disease.

With the remedy suggested by Dr. Vickers I emphatically disagree, and that is on the basis of half a century's experience of the problem from most angles—laboratory, clinical, social, and administrative, both local and general. As adviser on venereal diseases to the Ministry of Health, I saw, in the venereal-diseases treatment centres working under the Local Government (Venereal Diseases) Regulations, these diseases treated by general physicians, surgeons, gynæcologists, dermatologists, genitourinary specialists, and other kinds of specialists and can say without any hesitation whatever that in those hands, however skilful they might be in their own branch, with very few exceptions the result (so far as ridding the patients of their infections and stopping their danger to the community was concerned) was bad. I have often wondered why these specialists in other branches accepted charge of venereal-disease clinics, and have sometimes remarked, at the end of a session which the medical officer spent seated at a desk writing "Rp." on successive case-sheets, that he must find it very boring. Dr. Vickers contrasts venereology with specialties concentrated on particular parts of the body and seems to think there is something unnatural about it; but what about tropical diseases, which are analogous to venereal diseases in being like one another in the circumstances of their contraction?

Dr. Vickers sees little likelihood in young men taking up venereology. He is probably correct in the present circumstances, particularly when those responsible for the arrangements for dealing with what is really a serious national problem take such a superficial view of the position as to talk of "these dying diseases".

London, S.W.1. L. W. HARRISON.

SIR,—The letter by Dr. Vickers about the future of venereology seems to me to have been based on a misunderstanding of the fundamental argument in Mr. Ambrose King's article. There is, as far as I am aware, no evidence that the service is "slowly but inevitably disintegrating". In 1956, 98,212 men and women attended the venereal-disease clinics of England and Wales for the first time. The fact that so many people should seek advice and help does not appear to indicate that the service is disintegrating.

With regard to the recruitment of young doctors, the major problem here is surely one of confidence in the future of the service. If consultant posts which become vacant are not filled or are filled with a reduction in the number of sessions it will obviously be difficult to persuade competent young men that their future lies in venereology. In some areas the spectacle of consultant work being carried out by S.H.M.O.s and even persons who have no special training in the subject is hardly encouraging. The solution of the recruitment problem lies in the hands of the regional boards and the boards of governors of the teaching hospitals. Only if posts are filled by trained venereologists when they become vacant will entry into the specialty be stimulated and the future of the service assured.

Patients attending venereal-disease clinics have many special problems, both physical and psychological, and special training and experience is needed to handle them. When those who have or think that they have venereal diseases are dealt with by persons without adequate training and interest in the subject, they are frequently mismanaged.

London, W.8. R. D. CATTERALL.

HOOKWORM AND ANÆMIA

SIR,—The communication on hookworm and anæmia by Dr. Meiklejohn and Dr. Passmore in your issue of April 19 is very opportune, for I am one of those who are in mild disagreement with some modern high-powered hæmatologists who would ascribe most forms of anæmia in the tropics to dietetic causes, thereby trying to debunk the role of the ancylostome and the subtertian malaria parasite as the main causes. I feel certain that they could not have done so had they lived as long as I have and been with me fifty years ago.

There is no doubt that there is a racial factor. The Fijians, who are heavily infected with hookworms (27·8% [1]), seldom, if ever, suffer from anæmia—and this has been verified by Wills and Bell.[2] On the other hand, the Indians who are domiciled in Fiji frequently do, and I saw many at necropsy there in 1910. Similarly in Ceylon, in 1912, I performed such an examination in a Tamil where death was due to intestinal hæmorrhage from petechiæ throughout the small intestine. This specimen, together with the adherent ancylostomes, was brought back to the museum of the London School of Tropical Medicine.

There was another which springs to mind in a young Tamil labourer who died from acute heart-failure on climbing a hill, and in him, too, the hookworm anæmia was so severe that his hæmoglobin was about 15%.

1. Bahr, P. H. Res. Memoir no. 1, London School of Tropical Medicine, 1912
2. Wills, L., Bell, M. E. *Lancet*. 1951 ,i, 820.

As regards malaria, the present anti-larval and hygienic measures have been so widely applied, aided by the much improved methods of drug prophylaxis and treatment, that a state of affairs has been created where the malarial anæmia, with which I used to be so familiar, exists no more. I remember in particular a group of Arabs from the Hedjaz in hospital in Cairo in 1916. They were one and all suffering from such a severe form of anæmia of the pernicious type that they became the subject of hæmatological studies by the contemporary blood experts. In some few the spleen was palpable.

However, after careful scrutiny of their blood by the thick-film method, scanty crescents of the subtertian parasite were found in all and they recovered after long-continued quinine therapy.

London, W.1. PHILIP MANSON-BAHR.

ABSENCE FROM WORK ON A MEDICAL CERTIFICATE

SIR,—I write to support the statement of Dr. Gough (April 19). He asks employers to accept a written statement from employees concerning their sick absences rather than demanding a doctor's certificate.

This company pays all clerical and factory employees for absence due to sickness. Twelve months ago we dispensed with doctors' certificates for any absence of less than four days. On return to work after illness employees now report to the nurse in the works surgery and sign a declaration that their absence was due to genuine sickness.

This scheme, which is greatly appreciated by the employees as well as by the local doctors, has in no way been abused and the absence due to sickness has not increased.

Wm. R Warner & Co. Ltd., Eastleigh, Hants. H. WOODHOUSE Personnel Manager.

PENICILLAMINE AND DIMERCAPROL

SIR,—I have read with interest of Dr. Aposhian's studies (April 19) on the relative efficacy of BAL and penicillamine in protecting rats against mercuric-chloride poisoning. He criticises my work on the relative activity of these two compounds in mobilising copper from patients with Wilson's disease [1] on the grounds that the two drugs were not given in equimolar amounts or by the same route.

May I suggest to Dr. Aposhian, first that penicillamine and BAL should not be compared on a molar basis but in terms of available sulphydryl groups—i.e., one molecule of BAL (M.W. 124) to *two* molecules of penicillamine hydrochloride (M.W. 205 × 2), approximately 1 unit of BAL to 3·3 of penicillamine HCl. On this basis he will find, if he reads my paper again and carefully, that cases 3, 4, and 6 were given approximately comparable doses of these two compounds. In each case the response, in terms of increased copper excretion in the urine, showed that the penicillamine was a very much more powerful cupruretic agent than BAL.

Second, in clinical practice, as opposed to animal experiment, it is ridiculous to limit the usefulness of a new treatment by scaling it down to the limitations of the old. To compare the activity of BAL and penicillamine in man why reduce the dose of the latter and give it parenterally, why not raise the dose of BAL so that it is comparable to the maximum tolerated dose of penicillamine (around 4 g.) and give both by mouth? The procedure would be just as logical.

Finally I suggest that Dr. Aposhian has tumbled into the old pitfall of trying to argue direct from the experimental animal to man. From his results with mercuric-chloride poisoning in rats he is attempting to draw valid conclusions about copper intoxication in man, a hazardous procedure. From the patient's point of view the usefulness of a drug can be decided only in terms of the response obtained to the maximum tolerated dose.

1. Walshe, J. M. *Amer. J. Med.* 1956, **21**, 487.

Department of Experimental Medicine, Tennis Court Road, Cambridge. J. M. WALSHE.

PLASTIC BAGS FOR STORING AND TRANSFUSING BLOOD

SIR,—The article by Dr. Dudley and his colleagues (Feb. 8) is of great interest to those of us in the United States who have been concerned with the development of improved blood-transfusion equipment. The studies reported undoubtedly represent a sincere effort to compare plastic and glass containers, and at first glance the conclusion that red cells are no better preserved in plastic than in glass seems to be supported by the experimental data.

I feel it my duty, however, to point out that the experiments reported did not truly compare the preservation, during refrigerated storage, of red cells collected in plastic bags and glass bottles.

The solution used in the bottles (A.C.D. formula A, *U.S.P.*) was transferred from the plastic bags to the bottles, presumably shortly before collection of blood. This solution was autoclaved in the plastic bags and had been exposed to the plastic up to the time of use. It was not autoclaved or stored in the bottles in which the blood was collected. Thus the survival experiments of the bloods collected in the bottles cannot reflect deleterious effects on red cells of changes taking place in the solution on long exposure to glass. There is increasing evidence that an interaction between contained solutions and glass surfaces does take place under such conditions.

On Oct. 12, 1957, a conference on the Deterioration of Parenteral Solutions was called by the National Research Council in Washington, D.C. At that conference a report on particulate matter in intravenous fluids was presented from the Walter Reed Army Institute of Research. Using an instrument primarily designed for red-cell counting, it was found that solutions of saline, dextrose, and dextrose plus saline, dextran, and A.C.D., which had been stored for varying periods of time, registered particle-counts up to a million per 100 ml. These particles were found to be silica. Precipitation of fibrin from whole blood by means of finely divided glass is often used. Such a reaction may well account for the frequent finding of "sludging" of red cells in blood collected in bottles. This is destructive to red cells of stored blood, as shown by the elevation of the hæmoglobin content of plasma.

In contrast, the A.C.D. solutions processed in plastic bags had particle counts of less than 10,000 per 100 ml. Widespread experience has shown hæmoglobin levels of plasma of blood collected in plastic bags to be consistently lower than that of blood collected in glass.

It may therefore be truthfully said that the experiments reported merely demonstrate the excellent stability of A.C.D. solution autoclaved and stored in plastic containers.

No claim has ever been made that A.C.D. blood collected in plastic bags could be used routinely beyond the 21-day limit prescribed by the Minimum Requirements for Human Blood (Citrated) [1] of the National Institutes of Health. In the article by Walter [2] referred to by Dudley et al. in eleven experiments the post-infusion survival of the red cells of blood stored 21 days at 4°C ranged from 66 to 93%, averaging 84%, certainly a very safe and satisfactory level, even for multiple transfusions.

1. Federal Register. Department of Health, Education and Welfare, Public Health Service (42 CFR, part 73, 1) Biologic Products, Whole Blood (Human) p. 6840.
2. Walter, C. W., Button, L. N., Ritts, R. E., Jr. *Surg. Gynec. Obstet.* 1957, **105**, 315.

Strumia [3] reported red-cell survival by the ^{51}Cr method of blood collected in A.C.D. in bottles and in plastic bags, and stored for 21 days at 4° C. This series comprised 9 glass bottles and 31 plastic bags obtained from four American manufacturers. The mean values for bloods in plastic ranged from 62 to 87%, averaging 78%, whereas the average value in glass was 70%. Dudley et al., referring to Strumia's article, state "... these results were obtained from two autotransfusions and one transfusion with a compatible recipient ..."

The rate of deterioration of red cells of A.C.D. blood is not a linear function of storage time, but becomes increasingly accelerated after about 2 weeks of storage, so that the red cells are unfit for use after 25–28 days after collection.[4] No comparative values at a 21-day storage period were reported by Dudley et al. The finding of no improvement of preservation of red cells in plastic over glass at a period when A.C.D. blood is intrinsically useless, and may well be dangerous, is not very helpful for the clinician.

Except for its importance to the military, a "dating period" in excess of 21 days is of no great significance in modern blood-transfusion practice. It is our experience that blood is usually scarce and turnover rapid, so that a large proportion of bloods are issued within 10 days of collection. This is very fortunate for the patient. Consideration of factors other than red-cell viability are far more important in the safe and efficient conduct of blood-transfusion.

Adherence to aseptic techniques in collection, processing, and administration is of prime importance.

All rigid containers with rubber closures require puncture. While the risk of contamination incident to collection (by trained personnel) is undoubtedly small, once the protective covering of the stopper has been pierced, that area is potentially contaminated. Braude [5] showed that re-entry by puncture of the stopper carries a real risk of introducing microorganisms into the container. All refrigerators are contaminated areas. Pittman,[6] in reviewing fatal reactions resulting from administration of contaminated blood, found the gram-negative psychrophiles to be the most common causative organisms.

This danger is so well recognised by the National Institutes of Health [1] that sampling by piercing the stopper, except for administration of blood, is forbidden. Dudley et al.'s remarks, "... particularly those who object to opening bottles for samples", suggests a truly alarming state of affairs.

In the fabrication of the type of bag investigated, the donor tube with attached shielded needle is attached to the bag, and the assembly, with its contained solution, is autoclaved as a unit. This reduces the risk during collection to the minimum of piercing the skin for phlebotomy. The outlet ports are protected by sealed plastic tabs until the moment of assembly with the giving set, thereby eliminating direct contamination during refrigeration. The risk of airborne contamination is also reduced, since the donor tube is filled with solution to the needle tip, and with proper technique no air can enter the tube before phlebotomy.

Unfortunately, we have no record in this country of the rate of contaminations of bloods, or of the prevalence of pyrogenic reactions, since there is no requirement that reactions be reported. Reaction rates with bottle-collected blood are estimated at 2–5%. 6669 bloods were transfused from plastic bags in 1951–55, and of these 5525 were cultured. The percentage of positive cultures was 0·53, and the percentage of pyrogenic reactions following infusion 0·83 [5]—this is evidence of the superiority of the plastic bag over glass bottles in point of safety.

The integral donor tube remains with the bag, and when serially numbered provides positive identification of blood and pilot sample at all times. Isolation of segments by dielectric sealing provides for multiple sampling without entry of the container, and hence repeated cross-matching can be done with no risk of contamination of the residual blood. In like manner samples for culture [7] can be obtained with complete safety at any period of storage.

Dudley et al. state: "... its routine use would confer minor advantages such as freedom from the danger of air embolus". Schmidt [8] has recently published case-histories of donors who suffered air emboli during collection of blood in gravity bottles. Accidental occlusion of the air-vent permitted pressure to build up within the bottle so that air was forced into the donor's vein on release of the tourniquet. Air embolism is a definite possibility when air is introduced into a bottle to speed administration, and this type of accident is commoner than is generally conceded. Neither type of accident can occur with plastic bags since they require no venting, for taking or giving, and administration is hastened by external pressure.

The plastic bag tested was designed not as a substitute for the glass bottle, but to free the practitioner from the limitations in the administration of *all* clinically useful components of blood imposed by rigid containers. The vacuum or gravity (venous occlusion) bottles currently used in the United States were designed to meet the emergency of establishing an overseas whole-blood programme during World War II, and performed yeoman service. They were intended only for the collection, transport, storage, and administration of whole blood, and not for subdivision into components.

No successful widespread programme has ever been established for salvaging of red cells for clinical use from whole blood collected in glass bottles. During World War II, the Korean action, and subsequently, all of the red cells of blood collected primarily for plasma have been discarded, and this has been the fate of over 15,000,000 units of blood collected in the United States.

It has been known since 1947 [4] that the survival of red cells of A.C.D. blood from which the plasma has been removed within 24 hours after collection is at least equal, after 21 days of storage, to that of red cells stored as whole blood for a similar period. This finding has recently been confirmed by the ^{51}Cr method on blood collected in plastic bags.[9] With suitable transfer bags, supernatant plasma can be expressed from the collection bag and the residual cells can be usefully used for the full 21-day dating period.

The indications for the use of separated red cells are now firmly established.[10] In current practice about 30% of transfusions at the Peter Bent Brigham Hospital are of separated red cells. All patients needing transfusions for the maintenance of a chronically depleted red-cell mass, or in whom the administration of whole blood involves the danger of circulatory overloading, receive separated red cells.

Since most platelets are contained in the expressed plasma, and since, by proper manipulation, the buffy coat of centrifuged blood may also be discarded, sensitisation by platelets [11] and leucocytes [12] can be minimised. This is of extreme importance to the patient needing repeated restoration of red-cell volume.

The plasma harvested in the separation of red cells expands the donor panel. Storage of plasma at room temperature for 6 months virtually eliminates the transmission of virus of homologous serum jaundice.[13 14] Since this plasma can be pooled, it becomes available for emergency use without typing.

The treatment of thrombocytopenia with infusions of platelet-bearing plasma or concentrated platelets is now fully established. The percentage of platelets found to be viable (remaining in the circulation for from 2 to 5 days), when prepared in several types of equipment, was as follows [15]:

Siliconed syringes, direct transfusion: 80–90%.
Fresh (1 hour) blood in plastic in A.C.D. or sodium edetate: 75–80%.
Platelet-rich plasma, plastic bag: 60–65%.
Platelet concentrate, plastic bag: 50–55%.
Fresh blood, glass, gravity: 15–20%.
Stored blood (24 hours) glass: 0.

The flexibility of plastic equipment renders it most suitable for preparation of platelets for infusion.

We feel that the incorporation of highly versatile plastic equipment into our practice of blood therapy has not only resulted in great economy in the use of blood but has often been life-saving in cases which would have been helpless to the physician with only conventional equipment.

Finally, with regard to the minor technical difficulties mentioned, I believe it was Benjamin Franklin who said that "All arts are capable by practice of improvement."

Harvard Medical School,
Boston, Massachusetts. JOHN G. GIBSON.

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MITRAL VALVOTOMY AND PREGNANCY

SIR,—My letter (April 5) may not have been expressed with sufficient clarity, but Dr. Wade and his colleagues (April 19) have misinterpreted the comments on their paper.

The problem of mitral valvotomy during pregnancy is discussed and then in the last paragraph it is stated that surgery during pregnancy is undesirable unless there is evidence for tight stenosis based on severity of symptoms before pregnancy began or objective evidence of long-standing pulmonary hypertension. It is not stated that both these criteria should be present.

Actually in our overall experience of patients proved to have tight stenosis electrocardiographic evidence of right ventricular hypertrophy by conventional standards in the conventional leads has only been present in 34% (although by slightly more liberal criteria and including the right-sided V leads in 65%).[1] The point at issue is this—if operation is advised solely on the basis of symptoms which first arose during pregnancy then, from our experience and that of others, there will be many cases in which the degree of stenosis found will be relatively mild and insufficient for the patient materially to benefit from valvotomy.

In fact, Wade et al. state in their paper that 4 of their 12 patients had only moderate stenosis which "could have been managed medically". Certainly pulmonary œdema may occur during pregnancy without tight stenosis, but in our experience such cases can always be managed medically and after the confinement undue dyspnœa on exertion disappears. We do not agree with Dr. O'Driscoll and Dr. Drury (April 12) that operation should be deferred until after delivery because, as Wade et al. point out, pulmonary œdema from tight stenosis may be fatal despite initial response to medical treatment.

Department of Medicine,
University of Edinburgh. R. W. D. TURNER.

A NEW SULPHONAMIDE

SIR,—Dr. Sklar (Feb. 1) and Dr. Platt (March 1) have written about their experiences with 'Sethadil' (sulphaethylthiadiazole), a sulphonamide recently introduced to this country. This preparation was in use in a Naval hospital during the winter of 1957–58, and all cases of acute follicular tonsillitis were given a course for 3–5 days; hæmolytic streptococci were isolated from a single throat swab in fourteen out of forty-five cases and the average duration of sickness was 8·9 days (range 3 to 35 days), assessment of cure being clinical and not bacteriological. Sethadil was well tolerated and there were no toxic effects.

A review of cases admitted to the same hospital during the previous winter, 1956–57, revealed very similar results with other treatments. During this period forty-six patients were under treatment and the form of therapy was dictated by the admitting medical officer; in this series hæmolytic streptococci were isolated in nineteen cases after a single throat swab. The average duration of absence from duty of nine treated with aspirin gargles was 9·4 days, of eleven treated with aspirin gargles and dequalinium ('Dequadin') lozenges 9·5 days, of sixteen treated with parenteral penicillin 10·9 days, of six treated with parenteral penicillin and dequalinium lozenges 9·7 days, and of two treated with trisulphonamide tablets ('Sulphatriad') and dequalinium lozenges 8 days; in addition two patients treated with parenteral penicillin and then either streptomycin or aureomycin were sick for 8 and 10 days respectively. The average period of sickness of all forty-six patients was therefore 9·9 days (range 3 to 21 days).

Parenteral penicillin has long been regarded as the treatment of choice in tonsillitis since its use is undoubtedly associated with a lessened risk of rheumatic fever and other complications, an advantage not obtained with sulphonamides. However, where the risk of complication is negligible or there is a danger of penicillin sensitisation, a satisfactory response can be obtained with Sethadil.

Medical Department, Admiralty,
London, S.W.1. J. M. CLIFF.

INTRATHECAL PHENOL FOR INTRACTABLE PAIN

SIR,—Following the excellent and comprehensive article by Dr. Nathan and Dr. Scott (Jan. 11), Dr. Allan Brown's comments (Jan. 25) on intrathecal phenol for intractable pain are of considerable interest. I agree that "until a sufficient period of observation has been completed it would seem to be prudent to restrict the intrathecal use of carbolic acid dissolved in myodil to the relief of pain of malignant disease".

I do wonder, however, whether he has been led to the same conclusion as myself about one of the underlying reasons for such uncertainty. I pointed out [1] that, in late cases of carcinoma, the action of intrathecal phenol was delayed by areas of growth in roots and ganglia, and thus became ineffective. In retrospect, I think this represented only half the truth, applying chiefly where the spine itself was involved. In most cancer cases the neurones seem to have a variable and lesser resistance to phenol action. Whether this is caused by preliminary inflammatory change and infiltration by round cells or inclusion bodies, I cannot say, but it makes some difference in the reaction following intrathecal phenol injections. The impact is conversely more severe with non-malignant conditions, and the hazard is greater in the presence of scoliosis and arthritis or where the limb is already impaired from disease or previous operation.

I have been making a further approach recently towards more accurate placing and dosage of phenol solutions for cancer cases, which may afford a helpful indication for safer injection in non-malignant conditions.

First, pain areas are fully mapped out on standard diagrams of nerve segments.[2 3] Five days after injection, these areas are remapped and further appropriate injections are made until pain is totally eradicated. The segmental diagrams referred to are invaluable for this purpose, and I wish to acknowledge the help I have received from them.

Secondly, an early indication of sensory effects is ensured by good backward rotation of the patient (as in fig. 3B of my 1955 paper).[4] For below D12 level, 1 ml. of phenol (1 in 20 in glycerin) is the arbitrary upper limit for safe dosage. Half this amount (i.e., 0·5 ml.) is injected, followed by immediate slight elevation of the patient for a second or two to move the solution on. After a few moments, paræsthesiæ may begin; if they are severe or associated with cramps, for the second half of the injection less than 0·5 ml. is given. Skin sensation should be tested after the preliminary 0·5 ml. If there is anæsthesia, the second part of the injection should be delayed until it has cleared and should be reduced below 0·5 ml.

Differences in analgesia between the injected side and the opposite side give a valuable indication of where the agent is flowing and of whether further tilting is necessary in either direction.

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The same technique, using two doses, each of 0·5 ml., is applied with the silver nitrate agent (1 ml. of phenol 1 in 25, containing silver nitrate gr. $^1/_{30}$ per ml.) but this agent is never used for non-cancerous conditions, or above lumbar level. Glycerin is used as the conveyor at the lumbar level since it does not tend to spread or to clog up roots for later injections.

For *non-malignant* conditions, I have been recently using 0·5 ml. of phenol, 1 in 20 in glycerin, at one session intrathecally. At a later date, a similar injection of 0·5 ml. can be given at another interspace if needed.

Dr. Lehoczky (March 8) again refers to the aqueous solution of phenol employed at the 1st or 2nd sacral foramen, which I always use instead of intrathecal injection for sciatic pain of non-maligant origin. Since 1952 I have also used it frequently for sciatic pain of malignant disease, in one form or another. Sometimes it is completely successful, but where it fails, the intrathecal method is more powerful. Furthermore, transsacral methods cannot effectively reach higher segments for malignant disease. It seems that each method has its own particular sphere of usefulness.

The application of intrathecal methods is essentially for cancer, with a very limited and cautious approach for pain of non-malignant origin at the present time.

Rochdale. R. M. MAHER.

NEW METHOD OF PHENOBARBITONE ADMINISTRATION

SIR,—May I briefly reply to Dr. Penman (March 29)?

1. "No conclusion whatever can be drawn from the data presented."—The facts are that each and all of the 18 patients showed a striking improvement, both in respect of personality and mental state, and also in the frequency and severity of their epileptic convulsions, whether or not they were receiving other drugs.

2. "There can be no guarantee that the patients took their various anticonvulsants as regularly before the spansule period as they did during it."—For many years a rigid routine and discipline has been in force in this hospital whereby the epileptic patients are lined up regularly at the prescribed times of day, and the medication is administered in the presence of the nurse. The same nurses had in fact been attending the 18 patients concerned for a number of years before the new method of treatment was adopted.

3. "Much or all of the 'improvement in personality' may have been due to added interest shown in the patients during this stimulating trial."—There had, prior to my "interest", been no lack of stimulation in this respect, and on two occasions previously individual doctors, by their work with these particular cases, had in fact produced slight but temporary improvement both in the mental state and in the convulsions. But they had not been able to achieve the definite and gradual reduction of convulsions, with final elimination, nor the striking improvement in the mental state and personality, which has resulted from the new method of therapy. If such an "interest" is so important and valuable in the treatment of epilepsy, there should be a great future for psychotherapy in this condition; but few doctors who have had experience in the management of epileptics would agree that it is likely to have much success.

4. "Since fits occur especially at times of bodily inactivity and mental vacuity, this added interest and stimulation may have helped to reduce their frequency."—Surely, the absence in the body (for approximately twelve hours, at night) of a sufficient supply of anticonvulsant medication is a more probable reason for convulsions. The presence of an adequate supply of such medication throughout the twenty-four hours must give the maximum protection and help to the patient, as regards both disturbance of sleep and abnormal electrical activity within the nerve-cell. Maintained control of both these important factors has been achieved since the introduction of 'Spansule' therapy, in each and every one of the 18 epileptics treated. Previously there had been many disturbances from fits and temper tantrums at night.

5. "Credit for improvement cannot be assigned to any one of those drugs separately."—Much credit must be given to spansule phenobarbitone for the phenomenal improvements obtained in my patients after it was adopted. If these improvements cannot be attributed to spansule, either wholly or in part, then they must be due to the drugs the patients were already receiving. If these drugs, combined with "interest" and psychotherapy, were really so effective, many epileptics now in colonies and mental hospitals could have remained in society without danger to themselves or others.

6. "Eighteen is too small a number of cases."—Dr. Penman is, I am sure, aware that improvements such as I have reported can be proven to be significant and statistically valid with 18 patients or even fewer. The advisability or otherwise of controlled trials, using inert substances, in patients with epileptic convulsions is open to discussion.

7. "Dr. O'Connor's results are striking indeed, but others hardly less striking have been overthrown by controlled trials, good examples being those of Kurtzke and Berlin and Booth et al."—Dr. Penman's original contention that "no conclusion whatever" can be drawn, would seem to conflict somewhat with his closing remark, "Dr. O'Connor's results are striking indeed". The fact that the trials to which he refers were both concerned with multiple sclerosis, and bore no relation to epilepsy with its specific complexities, makes his "good examples" appear weak and irrelevant.

Warley Hospital, Brentwood, Essex. DESMOND C. J. O'CONNOR.

SEQUELÆ OF INTRA-ARTERIAL INJECTION OF THIOPENTONE

SIR,—We are interested in the sequelæ of inadvertent intra-arterial injection of thiopentone. Gangrene has been reported after the use of 10%, and in a few cases of 5% solutions, but we can find no such complication reported after the 2·5% solution now in common use.

We should be grateful if any of your readers could supply us with information, which will be naturally treated confidentially, of intra-arterial injection, or of cases where venous thrombosis occurred, when either 2·5% or 5% has been used.

Nuffield Department of Anæsthetics, Radcliffe Infirmary, Oxford. D. L. PRYER.

PSYCHOSIS AND TREMOR DUE TO MECAMYLAMINE

SIR,—I was interested in the article by Dr. Harington and Dr. Kincaid-Smith (March 8), as I have had a similar case where mecamylamine was not given.

A man, aged 60, had been known to have hypertension since May 18, 1955. He had had several attacks of congestive cardiac failure precipitated by an erratic consumption of digitalis. He was admitted to the Addington Hospital on May 22, 1956, for an intercurrent salmonella infection. He also complained of weakness, giddiness, and dyspnœa on effort. His blood-pressure (B.P.) was 220/120 mm. Hg. There was no papill-œdema, no renal dysfunction, and no anomaly of the central nervous system. The heart was enlarged but there was no failure then. The B.P. was controlled by reserpine 0·25 mg. t.d.s. and pentolinium 200 mg. t.d.s. He was discharged on May 23, 1956.

Within a month the B.P. had risen again to 230/145, and the dosage of pentolinium was increased to 200 mg. q.i.d. After this the B.P. remained at levels varying from 160/105 to 180/120 for four months.

On Sept. 5, 1956, he complained of loss of weight and increasing depression. On examination he was found to be heavily pigmented (more than his usual pronounced sunburn) and the mucosæ had a bluish tint. There was a coarse tremor of all limbs, with a high muscle tone. The reflexes were brisk, power normal, plantars flexor. B.P. 180/100. Reserpine was discontinued because of the depression.

Two weeks later he was readmitted. The tremor was less obvious but the rigidity still present. His depression had deepened further and he was complaining of frequent involuntary seminal emission. The B.P. was 190/120. Lumbar puncture produced a normal fluid. The urine showed a trace of albumin and occasional red blood-cells. The blood-urea was 48 mg. per 100 ml.

Pentolinium was replaced by hexamethonium for two days, but then recommenced. The patient discharged himself after three days and had no more antihypertensive treatment.

A month later he was readmitted because of severe psychosis. He was disorientated and hallucinated, and showed paranoid tendencies. His speech was slurred, but muscle tone was normal and the tremor very slight; B.P. 270/160. The urine contained a trace of albumin. The blood-urea was 27 mg. per 100 ml. The hospital psychiatrist diagnosed an organic type of psychosis due to cerebral arteriopathy associated with hypertension, and suggested certification. The patient, however, absconded before this could be done and has not been seen since.

This case seems to be very similar to the cases mentioned by Dr. Harington and Dr. Kincaid-Smith, but this patient has at no time had treatment with mecamylamine. This would suggest that the symptom-complex may be due to hypertension per se or to its treatment with any ganglion-blocking agent.

Addington Hospital, Durban. W. HIFT.

INFANTILE GASTROENTERITIS

SIR,—Dr. Librach has incurred much criticism for venturing to doubt if strains of *Escherichia coli* are of major importance in the ætiology of infantile gastroenteritis. During 1957 I admitted to hospital 38 cases of gastroenteritis in infants under two years. In all cases fæces were cultured, but *Esch. coli* of the presumed pathogenic types was isolated in only 3 instances. These included none of the 5 infants who were gravely ill. I have had similar experience in previous years.

Until the association can be more generally and constantly demonstrated, we should be permitted to keep an open mind on this matter. Incidentally, about ten years ago, proteus was frequently suggested as an important organism in this connection, a belief which now seems to be discarded.

Croydon. J. J. LINEHAN.

PATIENTS FROM ABROAD

SIR,—I write as a practising surgeon in Beirut, Lebanon, who for 15 years has worked with a British surgeon specialist and has admired British medical skill and practice both at home and abroad.

Recently a colleague of mine heard that I was contemplating a voyage to England and asked my help in escorting one of his patients. This patient had been booked in a private nursing-home as a paying patient. Confirmation had been received that a bed would be available for the required period. On applying for a visa, we were informed that she could not be granted entry without permission from the United Kingdom. This, we were told, was to protect the British taxpayer. A reply-paid telegram was sent; but two weeks later we were still awaiting the answer.

If this patient is being admitted to a private nursing-home, and is therefore a paying patient, where is the risk to the British taxpayer or to the N.H.S.? If there were any danger of her being financially insecure, who would be more likely to know about it—the authorities in England, or the consular representative on the spot? Surely the foreigners seeking to benefit from British medical skill and progress and willing to pay for it should be encouraged to do so, and facilities should be given for their quick admission to the United Kingdom.

Beirut, Lebanon. I. AYOUB.

*** Dr. Ayoub informs us that a visa was in fact granted for the entry of the patient into the United Kingdom, but arrangements had already been made for her to receive treatment in Switzerland, where she now is.—ED. L.

INTERMITTENT HYPERPARATHYROIDISM

SIR,—Dr. Whitby (April 26) reports a case of hyperparathyroidism due to an adenoma which he claims was intermittently overactive; this claim carries considerable physiological implications. In fact, some of the findings are hard to reconcile with the idea of intermittent overactivity. Parathyroidectomy, which did not induce a hypoparathyroid state, halved the 24-hour output of calcium in the urine, whereas before operation no variations of similar extent occurred; the variations that did occur before operation seemed unconnected with changes of the serum-calcium level.

In proven cases of primary hyperparathyroidism, the serum-calcium level can be found to be within normal limits at times, and abnormal at other times, in one and the same patient: this emerges clearly from fig. 48 of Albright and Reifenstein,[1] and my own experience supports this.

A considerable experience of determining the 24-hour output of calcium in the urine of outpatients suffering from stone in the urinary tract has shown me that, when taking their customary diets, outputs of up to 350 mg. of calcium a day must be accounted as normal. This agrees with Pyrah's findings.[2]

Sheffield. ARTHUR JORDAN.

BUDGERIGARS AND POLIOMYELITIS

SIR,—This interesting correspondence raises some points on which I should like to comment, as the result of experience of avian diseases in the field and in the laboratory. It also clearly shows the need for closer cooperation between the medical and veterinary professions.

Leg weakness is a common symptom in ailing budgerigars, canaries, and other small birds, and if they are not handled and examined it can easily be confused with paralysis. In budgerigars the symptom is often associated with severe enteritis of unknown ætiology, which is very common in this species. Some specific diseases affecting cage birds also produce the symptom of leg weakness.

True paralysis, however, does occasionally occur in these species, and, apart from trauma, probably the commonest cause in budgerigars is the pressure exerted by renal neoplasms on one or both sciatic nerves, which in birds are in close contact with the kidneys.

It is also thought that certain vitamin deficiencies may cause paralysis in some species of cage birds.

Even if there is doubt that budgerigars may contract infectious poliomyelitis, it is well known that cage birds are occasionally infected with other diseases to which man is susceptible. The best example of course is psittacosis (ornithosis), which infects numerous species of birds and is commonest in this country in pigeons and recently imported psittacines such as parrots and parrakeets. A more common disease, however, is salmonellosis, usually caused by *Salmonella typhimurium*, which affects numerous species, including budgerigars and canaries.

Another disease (common in pigs and turkeys) affecting budgerigars and some species of finches is that caused by *Erysipelothrix rhusiopathiæ*, which is transmissible to man, causing erysipeloid.

Ministry of Agriculture, Fisheries and Food, Central Veterinary Laboratory, Weybridge, Surrey. I. F. KEYMER.

1. The Parathyroid Glands and Metabolic Bone Disease. Baltimore, 1948.
2. *Proc. R. Soc. Med.* 1956, **49**, 722.

TESTING OF STERILISATION METHODS

SIR,—Dr. Schwabacher, Dr. Salsbury, and Dr. Bailey (April 19) wisely advise against the use of the present "sterility test packets". They also affirm that Browne's steriliser control tubes are reliable. This is certainly true if these tubes are correctly stored (at 70°F or less). Thus far Dr. Schwabacher and her colleagues confirm conclusions reached by others.[1-4]

It surprises me that they did not refer to Dr. J. C. Kelsey's recent paper,[3] which clearly shows that unpredictable variables may complicate the testing of sterilisers with any organisms, but particularly with *Bacillus subtilis* and similar mesophilic spore-bearers. The modifications of current procedure proposed by Dr. Schwabacher and her colleagues seem to me only to add new complications. Having read Dr. Kelsey's paper and having had some experience of testing sterilisers with both mesophils and thermophils, I agree with him that organisms should be used to test sterilisers only for special purposes, and that for routine tests a chemical indicator is the most useful.

Bacteriology Department,
Western Infirmary, Glasgow, W.1. J. W. HOWIE.

RECORDS OF IMMUNISATION

SIR,—With the increasing amount of prophylactic immunisation, is it not time that something be done on a national basis to issue permanent records to all those receiving these injections? At present any person may have been actively immunised against any or all of at least five diseases (smallpox, diphtheria, tetanus, pertussis, and poliomyelitis). International vaccination certificates are already in force against smallpox, yellow fever, and cholera.

It is rare for patients or their relatives, attending hospital casualty or other departments, to have the remotest idea whether or not they have been immunised against, say, tetanus; certainly they can never remember when it was done, and moreover they cannot be expected to appreciate the significance of the date of the test boosting injection.

Parish [5] writes:

"Accurate record-keeping is essential, and should include the dates of inoculation, the correct name of the preparations, the batch numbers, the dosage administered, and reactions (local, general, etc.). Every child should have a personal immunisation card which should be made out at birth and filed with the utmost care. It must be readily available when inoculations of all types are given, or when the child contracts an infectious disease. Intelligent parents could surely be trusted to safeguard duplicate cards, while the local authority remains responsible for the original. The free movement of populations which takes place in modern times makes duplication of these records essential."

There are clearly many problems (records will be lost, and so on), but surely they are not insuperable.

In many ways it is a pity that the wartime identity cards were abandoned: they could have been modified to include information about blood-group and immunisations. As far as immunisations are concerned a system of coloured inserts (each denoting a different course of injections), as used by the National Blood Transfusion Service for blood-donors, would go some of the way towards overcoming the problem of lost records. Most people can remember the colour of their blood-group card even if they have lost it.

It has been suggested that tattooing could be used for permanent recording, but the multiplicity of information required makes this impracticable; and neither children nor parents could be expected to agree to the procedure.

Perry and Parish [6] suggested the use of a consistent set of abbreviated titles for all immunising substances, to ensure speedy, accurate, and unambiguous recording. The first part of the abbreviation is the shortened name of the disease; if only one disease is named in the title, the abbreviation is three-lettered, (e.g., Dip=diphtheria, Tet=tetanus); the only exception is that typhoid and typhus should be written in full to avoid confusion. When protection is to be conferred against more than one disease, the abbreviations for their names are the initial letters—e.g., TABT=typhoid, paratyphoid A and B, and tetanus.

The second part of the abbreviation, which is separated from the first part by an oblique stroke, is either Vac (indicating any substance for *active* immunisation) or Ser (any form of serum for *passive* immunisation). There is again one exception; since both a toxoid and a vaccine are used for active immunisation against the staphylococcus, Tox is used for toxoid.

The possibility of international adoption explains the preference for "Vac" instead of "Pro".

When necessary, the particular type of product may be specified in a third part of the abbreviation, again separated by an oblique stroke—e.g., Dip/Vac/APT for diphtheria, alum-precipitated toxoid.

In this hospital, we are now actively immunising those who have had a general reaction to a test dose of tetanus antitoxin, and shortly intend to offer a course of toxoid to anybody that has had this antitoxin, so the problem of these records is considerable. If there is enough support from others even more concerned than we who are working in hospitals, surely the Ministry of Health could be persuaded to take action on this very important problem.

Orpington Hospital,
Orpington, Kent. KEITH J. RANDALL.

FREQUENCY OF THE TRUE (CHROMATIN-POSITIVE) KLINEFELTER'S SYNDROME

SIR,—The frequency of the true or chromatin-positive Klinefelter's syndrome has been estimated as 1 in 10,000 males.[7] Our findings suggest a frequency as high as 1 in 1000.

As the syndrome is probably often associated with mild mental deficiency,[8 9] we examined the chromosomal sex by buccal smears of every second boy of the 671, aged 7 to 15 years, who attend the special State school for children with mild mental deficiency (I.Q. is in general between 75 and 85) in Zürich. Of the 336 boys examined, 8 have been found to be chromatin-positive. An independent observer (Prof. H. R. Wiedemann in Krefeld, Germany) studied the blood-smears of these 8 boys and confirmed our results. 6 of these boys are aged 12 years or younger and 2 are 13 or older. All have normal male external genitalia. The younger 6 show no signs of puberty and no gynæcomastia. The older 2 have pubic hair, gynæcomastia, very small testes in view of their puberal development, and increased gonadotrophin excretion. In the younger 6 no hormone studies were done. Testicular biopsy was done in only 1 of the younger boys; it showed no tubular sclerosis and absence of Leydig cells, which is normal at this age.[10] A detailed report about all 8 boys will be published later. According to common views these boys must all be regarded as

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3. Kelsey, J. C. *Lancet*, Feb. 8, 1958, p. 306.
4. Knox, R., Penikett, E. J. K. *Brit. med. J.* March 22, 1958, p. 680.
5. Parish, H. J. Antisera, Toxoids, Vaccines, and Tuberculins. London, 1958.
6. Perry, W. L. M., Parish, H. J. *Brit. med. J.* 1956, ii, 38.
7. Lennox, B., Ferguson-Smith, M. A., Mack, W. S., Stewart, J. S. S. Symposium on Nuclear Sex, 1958 (in the press).
8. Zublin, W. *Acta endocr., Copenhagen*, 1955, **14**, 137.
9. Pasqualini, R. Q., Vidal, G., Bur, G. E. *Lancet*, 1957, ii, 164.
10. Siebenmann, R. E., Prader, A.: in preparation.

examples of true (chromatin-positive) Klinefelter's syndrome (with a remote possibility of true hermaphroditism).

As we found 8 cases in half of the 671 boys with mild mental deficiency, the estimated number with Klinefelter's syndrome in the whole group is 16. The number of boys of the same age-group in the same city is 19,965. This means that the frequency of true Klinefelter's syndrome among boys with mild mental deficiency is 1 in 42, and among all boys at least 1 in 1248. As we know several other patients with Klinefelter's syndrome in the same city, who were intelligent enough to pass the normal school, the frequency among all males must in fact be higher, probably about 1 in 1000.

A. PRADER
J. SCHNEIDER
J. M. FRANCÉS
W. ZÜBLIN.

University Children's Hospital, Zürich, Switzerland.

NEOPLASIA

SIR,—May I, as a speaker on endogenous cancer at the conference on Neoplasia, reported in your issue of April 19, emend some impressions which it was not my intention to convey?

Discussion of old theories of cancer—for example, that senescence *might* be a cause—does not imply agreement. Cells of young children are liable to malignant change as we know from the occurrence of embryomas, and fœtal cells grafted together with carcinogenic chemicals readily become cancerous.

Although it is possible to induce cancer by subcutaneous or topical application of various chemical compounds, some even of endogenous origin, this does not exclude the possibility that the vast number of sporadic tumours are *not* caused by similar conditions in nature. Inbred strains of animals, in which spontaneous tumour incidence is often greatly increased, provide material for testing other ideas. But I would not myself postulate anything as vague as a cell "irritant".

Royal Beatson Memorial Hospital, Glasgow. B. D. PULLINGER.

TOXÆMIA OF PREGNANCY

SIR,—The continuing attempts to incriminate aldosterone in the ætiology of pre-eclampsia, in view of all the evidence denying it a share, merely reveals hypothetical ingenuity without plausibility.

Unless it can be shown that salt restriction in the diet *enhances* the toxæmic process the following data further deny aldosterone a part in the production of pre-eclampsia.

Orti et al.[1] have proved the presence of an aldosterone-stimulating substance in the urine of adrenalectomised rats deprived of salt, by injecting their urine into intact hydrated rats in which it caused a *decreased* excretion of salt. Quite obviously this substance in the urine of the adrenalectomised rats deprived of salt could not have been aldosterone, although it provoked the secretion of aldosterone when injected into the intact and hydrated subject.

It seems therefore that depriving an animal of salt indirectly provokes aldosterone secretion. All such deprivation would therefore conduce to salt retention and *if in significant amounts* to toxæmia—which is not a clinical experience. This evidence further denies aldosterone ætiological significance.

London, W.1. JOHN SOPHIAN.

1. Orti, E., Ralli, E. P., Laken, B., Dumm, M. E. *Amer. J. Physiol.* 1957, **191**, 323.

CLINICAL GERIATRICS

SIR,—The replies of Dr. Agate and Dr. Howell (April 5) to my query, arising from Dr. Howell's original letter, as to what exactly constitutes "clinical instruction in geriatrics", are largely irrelevant.

Dr. Agate's statement, "Elderly people with pneumonia seldom exhibit any pyrexia", is surely an exaggeration if the word "seldom" means what it usually does. That delirium is fairly common in elderly patients with infections has been known for centuries, and has, surely, been taught in teaching hospitals for many years. That infarction is frequently silent in people over 70 is possibly true, but the word "frequently" is surely hyperbole. Is occlusion "silent" more commonly in those in the seventies than in those in their sixties? Moreover, does such incidence refer to first attacks? These are very important points. Dr. Agate's description of geriatrics as "hard work in the clinical field" is an imaginative metaphor, but exactly what does it imply?

Dr. Howell queries my citation of 68 for the age of my hypothetical patient. To him, apparently, geriatrics starts at 80. Is there any official view as to what constitutes geriatrics? I should have thought that the age when a person is legally entitled to an old-age pension would be the only acceptable definition. But, on the other hand, I remember an international conference on geriatrics held in London when several American physicians included in their series of patients some even below the age of 50. Is not all this classification of diseases according to age very artificial?

London, W.1. M. H. PAPPWORTH.

ORGANISMS IN THE RESPIRATORY TRACT DURING ACUTE RESPIRATORY INFECTIONS

SIR,—The excellent contributions by Dr. Brumfitt and his colleagues[1] and by Dr. Steiner and his colleagues (March 22) prompt me to refer to the importance and value, from a diagnostic point of view, of the presence of specific antibodies in bronchial mucin.

In 1918, I investigated the exudate of dysentery stools for agglutinating antibodies to the dysentery group of organisms,[2] and found that specific agglutinins were present in diagnostic amounts at an early stage of infection.

Since then, investigations have been carried out by several workers (their findings have been summarised by Morgan et al.[3]) on the presence of local antibodies in the mucus derived from the intestine and reproductive tract and from the bronchi.[4–8]

If sputum, to which has been added a small volume of saline solution, is subjected to mechanical shaking with glass beads and centrifuged, the supernatant fluid can be investigated for its antibody agglutinin content against stock suspensions or against suspensions of selected colonies from plate cultures. These tests are much facilitated by use of the Garrow agglutinometer slab method.[9 10]

In this way bacterial flora of the mouth and pharynx (which do not produce antibodies) can be excluded and the necessity of obtaining material from bronchi by direct aspiration and swabbing becomes unnecessary.

West Worthing, Sussex. ARTHUR DAVIES.

1. Brumfitt, W., Willoughby, M. L. N., Bromley, L. L. *Lancet*, 1957, ii, 1306.
2. Davies, A. *ibid.* 1922, ii, 1009.
3. Morgan, W. T. J., Pierce, A. E., Smith, H. *Proc. R. Soc. Med.* 1953, **46**, 783.
4. Francis, T. *Science*, 1940, **91**, 198.
5. Francis, T. *ibid.* 1943, **97**, 229.
6. Fazekas de St. Groth, S., Donnelley, M. *Aust. J. exp. Biol. med. Sci.* 1950, **28**, 45, 61.
7. Fazekas de St. Groth, S. *ibid.* 1951, **29**, 339.
8. Fazekas de St. Groth, S., Donnelley, M., Graham, D. M. *ibid.* 1951, **29**, 323.
9. Garrow, R. P. *Lancet*, 1917, i, 262.
10. Manson-Bahr, P. Manson's Tropical Diseases, p. 952. London, 1935.

THE Y CHROMOSOME IN MAN

SIR,—In collaboration with Mr. Peter Dickinson I have recently investigated a case which appears to illuminate the function of the Y chromosome in man.

The details, briefly, are that, in the course of an operation for left inguinal hernia, a man was found to have, in the hernia, a uterus and uterine tubes and a right undescended testis. The left testis was in the scrotum. The penis and scrotum were quite normal. No ovarian tissue was found. The oral mucosa and neutrophil nuclear morphology were chromatin negative. The histology of the left testis is exactly that of chromatin-positive cases of Klinefelter's syndrome as described by Ferguson Smith et al.[1] and that of a chromatin-positive case of true hermaphroditism published by Armstrong et al.[2] except for the absence of Barr's chromatin mass. The right testis displays an identical picture as far as the seminiferous tubules are concerned, but the clumps of interstitial cells are atypical.

The coincidence of an identical type of tubular atrophy and hyalinisation in chromatin-positive Klinefelter's syndrome and true hermaphroditism and in this chromatin-negative case suggests:

(1) That the testicular changes in the two former are due not to the presence of two X chromosomes but to the absence of the Y chromosome. The presence of the testis is another matter.

(2) That our patient, who has not two X chromosomes, has probably no Y chromosome.

(3) The presence of uterus and tubes, and perhaps the atypical interstitial cells in the right testis, in our case, indicates that Y contains a gene which is antagonistic to the X feminising genes and plays a part with autosomal masculinising genes in the normal X,·XX switch mechanism.

I postulate the existence of two genes on the Y chromosome: (1) a gene necessary for normal development and maintenance of the seminiferous tubules of the testis (perhaps it is necessary for normal hormone production by the interstitial cells), and (2) a male determining gene.

A full account of the case is being prepared for publication.

I wish to thank Dr. Bernard Lennox, of the Western Infirmary, Glasgow, who has seen sections of the testes, and Dr. C. N. Armstrong, of the Royal Victoria Infirmary, Newcastle, who has been very helpful in hammering out the theoretical implications of the case.

Department of Anatomy,
The Medical School, King's College,
Newcastle upon Tyne. JOHN GRAY.

1. Ferguson Smith, M. A., Lennox, B., Mack, W. S., Stewart, J. S. S. *Lancet*, 1957, ii, 167.
2. Armstrong, C. N., Gray, J. E., Race, R. R., Thompson, R. B. *Brit. med. J.* 1957, ii, 605.

Parliament

Too Many Prisoners

Mr. Butler's speech a year ago in the House of Commons raised high hopes for the reform of our prisons; the debate in the House of Lords on April 23 showed how seriously progress is being hindered by the alarming rise in the prison population. In opening the debate Lord PAKENHAM pointed out that since Mr. Butler spoke the number of prisoners had risen from 21,600 to 24,309. As a result overcrowding was worse; and whereas in 1957 only 2000 men (and that was 2000 too many) were sleeping three in a cell, the number today was 4389. Nor was immediate relief likely, for the increase in the Borstal population had forced the authorities to use the first new prison to be built this century as an extra Borstal institution. In view of the acute shortage of accommodation it was lamentable to find that in the estimates for 1958–59 the provision for new buildings and alterations (as apart from repairs) was down by £16,000. Given such prison accommodation and the present wave of crime, he suggested that it was important to keep down the number of people in prison. The Maintenance Order Bill would do something to reduce the number of civil prisoners and he would also like to see an increased use of adult probation, more treatment outside prison for sexual offenders, the development of attendance centres, and the extension of a parole system.

Turning to the important and neglected question of research, he agreed that this was probably better conducted outside Government departments. But if the Government did not largely pay for it there were no signs of anyone else doing so. In 1957–58 £3000 was allocated to research; in the estimates for 1958–59 the figure was £11,000 which though better was still derisive. Excellent officials in the Home Office were showing a good deal of initiative in promoting projects, but clearly it had all to be on a pretty small shoestring. Without an institute of criminology research would remain uncoordinated.

He was glad that recruitment to the prison service had improved, and the number of officers had risen from 3636 in 1957 to 4093 today. But this improvement, too, had been partly nullified by the increase in the number of prisoners. The hours of work in central prisons were 30–42 a week, but in local prisons the average was only about 25. Though some good things had been done Lord Pakenham feared that our prison services were still "last in the queue" of the social services, and if present trends continued, they would soon need a telescope to keep their colleagues in sight.

Lord MANCROFT admitted candidly that the Home Office's plans had been sadly affected by the present financial stringency and by the substantial and unwelcome rise in the prison population. The total population of our prisons and Borstals was 24,500 at the end of March this year—the highest figure yet recorded. The high proportion of this increase among young men was especially alarming; the Borstal population had risen from 2600 in 1956 to 4000. These young offenders were the early arrivals of the post-war bulge in the birthrate. If this level of crime was carried forward into the full effects of the bulge, the situation in a few years' time would be appalling, and we might well expect a Borstal population of over 5000. But he hoped that this phenomenon would pass with the generation born just before or in the early days of the war.

He agreed that the problem could only be tackled by increasing accommodation and reducing the numbers of prisoners and some progress had been made.

It was hoped to establish an experimental attendance centre for men of 17 to 21 years at Manchester this year. A second junior detention centre had been opened for 65 boys and a Borstal for 50 girls. The new security prison was expected to be ready in June, but he regretted that it must begin its career as a Borstal. A second new prison should be completed in 1960, and the new psychiatric prison in 1961, a new central Borstal reception centre in 1960, a girls' security Borstal in 1960, and a boys' in 1961. To meet the immediate need a Ministry of Supply hostel had been acquired as an open prison for 480 men.

Research was of course fundamental to any consideration of the causes or treatment of crime, and last year the Home Secretary had set up a research unit within the Home Office itself. Increased support had also been given to projects at universities and other institutions.

Lord Mancroft pointed out that one of the greatest obstacles to prison reform was the inheritance of a large number of unsuitable but solidly constructed prisons, and it would be unrealistic to make any plans on the assumption that they could be replaced by modern establishments in the near future. Overcrowding had hindered the Commissioners' plans for modernisation and conversion as it was no longer possible to clear space to allow the work to proceed. But some improvements, notably in sanitation, had been achieved.

Central bath houses had been completed at 7 prisons and improvements would be undertaken this year at 3 more. A pilot scheme for modernisation of sanitary accommodation in wings, workshops, and exercise yards at Wormwood Scrubs should be completed next year,

a similar programme had been started at Dartmoor, and a programme for gradually modernising sanitary accommodation in all prisons would begin next year.

Speaking in the debate Lord ASTOR suggested that the prisons were in much the same position as the hospitals. They had a sensible wise direction at the top, a devoted but overworked staff, and obsolete overcrowded buildings. It was expensive to keep a person either as a prisoner or a patient, and it was therefore important that only the right people should go to prison, as it was important that only the right people should go to hospital.

Continuing his simile he said that prisons were like hospitals where the patients had been sent by doctors who had had no specialist training, who had not had the benefits of laboratory tests on the nature of the disease, who all too often never visited the hospitals, who merely prescribed the amount of medicine the patient was to receive with little expert knowledge of its chemical contents, and whose future had little to do with the percentage of patients successfully treated. If we ran our hospitals on those lines what a chaos there would be.

But that was what happened in our prisons. Our judges, our magistrates, and our recorders had no real training in penology. Was it not extraordinary that no Law Lord had taken part in this debate? Lord Astor thought that this abstention showed the extraordinary detachment of judges towards prisons. With the work of Freud we had had a real break-through in the study of mental health—a new and exciting chapter in the knowledge of how the human mind worked, what made people go wrong, and how treatment was likely to affect them. As a cockshy, Lord Astor threw out the suggestion that the education of barristers should be extended to include, at some period in their career, a study of psychology and penology and some form of practical work such as prison visiting or probation-officer work. Greatly daring he went on to suggest " refresher courses " for magistrates and even judges.

Supplies of Morphine for Port Medical Centres

On the adjournment on April 24 Mr. JAMES CALLAGHAN drew attention to the fact that though 24 of our largest ports had medical centres, staffed with qualified nursing sisters, which handled about 230,000 accidents a year they were not allowed to keep supplies of morphine for use in emergencies. The National Dock Board had applied to the Home Office in 1950 and in 1953 but had twice been refused permission. Mr. Callaghan described a distressing accident in Cardiff docks in October when a man's leg was torn off his body. Though three State-registered nurses were in attendance the man had to be brought ashore and travel in an ambulance over 3 miles of bumpy dock road to a hospital before he received an injection of morphine.

Mr. DAVID RENTON, joint under-secretary of State for the Home Department, said that it must not be overlooked that, though morphine did good by alleviating pain, it did harm by masking symptoms which might be important in diagnosis. This was one reason why it had been generally accepted by the medical profession that wherever possible a doctor should be present when morphine was administered. Another reason for caution was that this country was comparatively free from drug addiction, and the reason was the strictness and efficiency of our system of control. That system was based on the general principle that nobody should be in possession of a dangerous drug unless authorised by the law. Our dangerous drugs legislation gave effect to international conventions which this country had ratified and which required the exercise of stringent control over the supply, possession, and use of dangerous drugs. Within the framework of the legislation, however, special arrangements had been made for the administration of morphine in particular cases. Generally, these special arrangements related to circumstances where accidents happened and where it would be impracticable or unreasonable to insist on the presence of a doctor for the administration of the drug. Thus special authority had been given to certain first-aid men in the mines and to mountain rescue parties. Docks varied a good deal as to their proximity to the nearest town or hospital from which doctors could be summoned. At the moment there was no evidence that the circumstances of docks in general justified a broad exception to the general principle, but he was arranging for the matter to be urgently considered, first in relation to Cardiff docks in particular. In making these inquiries the Home Office would give the fullest weight to humanitarian considerations and the desire of all to minimise suffering.

QUESTION TIME

Russian Vaccine for Multiple Sclerosis

Dr. DONALD JOHNSON asked the Minister of Health, as representing the Lord President of the Council, whether he would consult the Medical Research Council with a view to obtaining a supply of the Russian vaccine for multiple sclerosis for the purpose of conducting, in this country, suitable tests of the efficacy of this vaccine.—Mr. DEREK WALKER-SMITH replied: No final decision can be taken about the use of this vaccine until information about it is received from the Soviet Union. In the meantime, in view of the evidence available from laboratory investigations carried out in the United Kingdom and in America which throw doubt on both its safety and effectiveness, the Medical Research Council does not propose to undertake clinical trials of its possible value in the treatment of multiple sclerosis. Dr. JOHNSON: May I ask whether the Minister recalls that he also said that he will allow imports of this vaccine through private sources, and that people who are extremely anxious to effect such imports—if the vaccine is any good—are desperately in need of further guidance on the subject?—Mr. WALKER-SMITH: The imports are on the individual guidance and responsibility of a practitioner recommending it. The tests on this subject will take a long time to carry out. Meanwhile, pending information from the Soviet Union, my hon. friend may be interested, for example, to look at the conclusions of Professor Dick, published in the *British Medical Journal* earlier this year; and he will also be able, I hope, to study the conclusions of Dr. Sabin of Cincinatti when they are published.

Dr. EDITH SUMMERSKILL: In view of the fact that we have little information about the ætiology or the treatment of this disease, can the Minister tell the House why, because there has been little success on the part of those concerned with the two inquiries, the Medical Research Council should not examine this vaccine, even though it does take a long time?—Mr. WALKER-SMITH: There is no evidence that any adequately controlled clinical trial of the effectiveness of this vaccine has ever been undertaken anywhere. In a disease of such protracted course over many years in which all patients show periods of remission which may be complete for several years, the design and execution of a therapeutic trial is exceedingly difficult. However carefully planned any such trial may be, I am advised that it cannot be expected to provide reliable results in less than five years, and perhaps we had better await the Soviet answer.

Mrs. BESSIE BRADDOCK: In view of the fact that the Minister is prepared to allow the import of this vaccine privately, does he not think it would be advisable for some investigation to take place? If perchance through a private experiment a sufferer got great relief, it might cause a difficult situation if this vaccine could be obtained only through private sources.—Mr. WALKER-SMITH: The position is that I would not stop the import of this vaccine if it were undertaken on the individual responsibility of a general practitioner who took responsibility for his own judgment. But in the generality, from what I know and have so far been able to ascertain about it, I could not recommend it, pending further investigation, particularly in view of the conclusions, not only of Professor Dick or Dr. Sabin to whom I have referred, but also of Dr. Broman of Gotenburg.

Poliomyelitis Vaccine

In answer to questions about the supply of poliomyelitis vaccine Mr. WALKER-SMITH said: Batches of vaccine from the two British manufacturers which were distributed to local health authorities last week total over ½ million doses, and a

batch of Canadian Salk vaccine of ½ million doses will be distributed within the next few days. Over 8½ million doses of vaccine will then have been distributed in Great Britain since the start of the scheme, 4½ million of them since the beginning of this year. Further vaccine should be distributed next month. These supplies will enable local health authorities to make good progress with vaccinations.

In addition to what is already in the pipeline, I am arranging for the purchase of a further quantity of American Salk vaccine in addition to the 7800 litres and replacements previously ordered from Canada and the U.S.A.

Mr. BARNETT JANNER: Does the Minister recollect that many months ago he was asked why he was not purchasing adequate quantities of vaccine from North America? Is it not a fact that had he ordered the requisite quantity and made allowance for a breakdown, he would be in a position today to meet all the requirements, as America then had supplies and was able to supply him? Is the Minister also aware that much of the vaccine that has been produced in America has been sold in America, and that he has been scandalously negligent in not providing what is necessary for this country?—Mr. WALKER-SMITH: When the original imports of Salk vaccine were arranged the Government were acting under the advice of the Medical Research Council that the imports should be regarded as a temporary measure until adequate supplies of British vaccine became available. There was no reason at that time to foresee the interruption of British supplies on the scale which has unfortunately happened, because they had been coming forward regularly for some time before that date. The stocking of Salk vaccine at that stage would have been inappropriate because it was not possible to make an estimate of the acceptability of Salk vaccine at that stage, having regard to the right of rejection. The hon. Gentleman has left out of account in his suggestion the consideration that the potency of this vaccine is not permanent. It is a perishable commodity.

Dr. SUMMERSKILL: As the Minister knows, the number of people eligible for inoculation is 10 million, and 50% of them have registered. That means that there will be 10 million inoculations to be given if they are all to have 2 inoculations. Can he say whether before June—that is before the time when poliomyelitis rears its very ugly head in this country—the 5 million registered will have had 2 inoculations?—Mr. WALKER-SMITH: I hope that that may be the case, but, as I have already explained, there are many unpredictable factors in this matter and we have to take account of them.

Mr. M. EDELMAN: Does the Minister recall that last year the Pasteur Institute was willing to supply large quantities of Lepine vaccine but that he took no action whatsoever? Does he also recall that the Prime Minister wrote to me last summer saying that there would be discussions between the Ministry of Health and French health authorities in order to make this vaccine available? Will the Minister say finally whether he or his predecessor, either directly or indirectly, ever gave any undertaking to Glaxo or Burroughs Wellcome that he would give them priority over potential overseas suppliers of vaccine?—Mr. WALKER-SMITH: I am not aware of any such undertaking in regard to priority. He may be thinking of the recommendations of the Medical Research Council that British vaccine should be regarded as our main, permanent source of supply and that Salk vaccine should be regarded as a temporary supply. In regard to French and other sources of supply, there would be many technical considerations involved before they could be brought into use—considerations which do not arise in the same sense with Canadian and American sources of supply. It seems better, therefore, to get our supplies from transatlantic sources.

Mr. G. R. CHETWYND asked the Minister what was the cost of the purchase of anti-poliomyelitis vaccine purchased to date, giving separate figures for imported and other supplies.—Mr. WALKER-SMITH replied: The total cost of supplies of poliomyelitis vaccine distributed to date in Great Britain is approximately £1¾ million; between a third and a quarter of this amount was paid for imported supplies. Mr. CHETWYND: Can the Minister give an assurance that the availability of this vaccine, both from home supplies and overseas, has not been held up or delayed in any way by a shortage of dollars or lack of resources for development of production at home?—Mr. WALKER-SMITH: There is no particular difficulty in regard to money. In the estimates for 1958-59 £2 million is included for this purpose and represents 10 million doses. If it should be necessary to have more vaccine, I am sure the House will be sympathetic to the submission of a supplementary estimate for that purpose.

Mr. CHETWYND asked the Minister the nature of the tests used before imported anti-poliomyelitis vaccine is issued to local authorities; and how long they take.—Mr. WALKER-SMITH: Salk vaccine is tested by the manufacturers for safety, potency, and sterility in the country of origin. The United States Government arrange, in addition, for safety tests and for potency tests. The potency tests are on monkeys and the safety tests on tissue cultures and on monkeys. The tests carried out by the Medical Research Council in this country comprise safety, potency, and sterility tests, involving safety tests on monkeys and on tissue cultures, and potency tests on monkeys. The Medical Research Council tests may take up to twelve weeks, but are often completed in ten or less. Mr. CHETWYND: While recognising the absolute need for safety in this matter, is it necessary to have a duplication of these tests and is it necessary for them to take quite so long?—Mr. WALKER-SMITH: The question about the necessity for duplication of tests merits consideration in the circumstances. It is a fact that the record of the American tests has been increasingly reassuring over recent periods.

Protective Clothing and Purchase Tax

In response to almost twenty questions asking why purchase tax was being imposed on miners' protective helmets and footwear and what revenue it would raise, Mr. J. E. S. SIMON, financial secretary to the Treasury, replied: The estimated yield of the proposed 5% tax on these boots and helmets is of the order of £100,000 per annum. But the revenue to be raised was not a significant factor. My right hon. Friend proposed this change as part of a rationalistion of the purchase tax, which also involved reductions of the tax on miners' caps from 10% to 5% and on miners' belts from 30% to 5%.

Mr. THOMAS WILLIAMS: If the object of this tax was not the revenue to be derived therefrom, what was the other purpose? Does that other purpose justify imposing any duty on protective clothing such as these shoes and caps?—Mr. SIMON: Where there is an anomaly in a tax, it involves unfairness and discrimination between one citizen and another. Protective clothing was already taxed. Members have had an opportunity on many occasions of discussing whether all protective clothing should be exempt, and it has not been found possible to do this.

Mr. G. O. SYLVESTER: Is the Financial Secretary aware that this taxation will cause deep resentment in the coalfields, especially in view of the figure that the tax will yield, which is nothing when compared to the amount of accident to life and limb which these commodities have prevented and which happened in the old days when the men wore ordinary clothing?—Mr. SIMON: I sympathise very much with what the hon. Gentleman says, but I hope it will be understood that the tax is part of a larger transaction which includes reductions in purchase tax on some of the articles used by miners.

Mr. WILLIAM STONES: Is the Financial Secretary aware that many people in the mining industry have spent much time in recent years trying to persuade and encourage men who work underground to discard their prejudices and their cloth caps and to wear safety helmets and boots? Is he further aware that the people to whom I refer are deeply concerned about the possibilities of this imposition of purchase tax being likely to interfere with their efforts to persuade men to wear protective equipment, particularly in view of the meagre amount likely to be saved?—Mr. SIMON: I know of these efforts, and I should be very sorry if they were in any way affected; but I should remind the House that the tax on protective helmets will be under 6*d*.

Obituary

FRANK HAMILTON LACEY

T.D., M.D. Manc., F.R.C.O.G.

Dr. F. H. Lacey, honorary consulting gynæcologist to the Manchester United Hospitals, died at his home in Sussex on April 11.

He was born in 1879, the son of Dr. T. S. Lacey, who practised in Oldham and Manchester. Frank Lacey studied medicine at the Victoria University, Manchester, qualifying in 1906. He was resident obstetrical surgeon at St. Mary's Hospital from 1908 to 1912, and later he served as anæsthetist and registrar. His association with St. Mary's was interrupted by his service with the R.A.M.C. during the 1914–18 war, but on his return to Manchester he was appointed to the honorary staff, and he remained an active member until his retirement in 1946. He was also consultant gynæcologist to Crumpsall Hospital and gynæcologist to the Christie Hospital. For many years he was clinical lecturer at the University of Manchester. He was a foundation fellow of the Royal College of Obstetricians and Gynæcologists.

R. N. writes of his old chief:

Dr. Lacey endeared himself to his patients because of his real care and concern for them and his unending patience to ensure their welfare. To the hospital staff he was known as Pop Lacey. His cheerfulness and kindness made him liked by all who worked with him. He took a keen interest in the teaching of both medical students and midwives, and I am sure many remember him as a teacher, for his style was rather novel. His lectures and tutorials were rather in the nature of a continuous viva interspaced with graphic illustrations, usually of situations both medical and social which the students might meet in later life. He was a raconteur par excellence, and the situations were often highly humorous with solutions a little removed from medicine. Outside our profession he had many interests and one of his favourite pastimes was the training and racing of greyhounds.

Despite a severe illness shortly before he retired, he recovered a degree of good health which allowed him to fulfil his lifetime's ambition—to be a farmer. Leaving Manchester he moved south, and "down on the farm" he enjoyed many years of active retirement as a very good farmer. He was devoted to his family, and in his home life was extremely contented and happy. You always left his house with a deep impression that it was a real home; and that may have been the secret of his happy and cheerful outlook, for though quick of temper he quickly forgave any mistakes we young residents might make.

GEOFFREY WILLIAM RAKE

M.B. Lond.

Dr. Rake, research professor of microbiology in medicine in the University of Pennsylvania and scientific director of the international division of the Olin Mathieson Chemical Corporation, died on April 20 at Princeton at the age of 53. He studied medicine at Guy's Hospital, but he had spent almost all his professional career in the United States.

He was born at Fordingbridge in Hampshire and went to King's School, Canterbury. He qualified from Guy's in 1927, taking the M.B. Lond. with honours the following year. After three years working in the department of pathology of Johns Hopkins University under Prof. W. G. MacCallum, he became in 1931 assistant in pathology and bacteriology at the Rockefeller Institute for Medical Research in New York, where he made a special study of meningococcal infection and immunity. As a result of this work he was put in charge of the laboratory study of an outbreak of meningitis in a Government camp, and his work in this epidemic led to important results in identifying meningococcus carriers. Later he extended his studies to cerebrospinal meningitis and the pathology of pneumonia. In 1937 he was appointed head of the microbiology division of the Squibb Institute, and later he became director of the institute and of the Squibb medical division. In these new appointments his investigations and interests extended to include the virus and rickettsial diseases and the use of antibiotics. He travelled widely in the Far East studying new pharmaceutical preparations and surveying research facilities. In 1953 he visited India at the invitation of the Government, and the following year he was a guest lecturer at Taiwan National University. He was also director of a research project on anaplasmosis which was jointly sponsored by Mexico, the United States, the University of Pennsylvania, and E. R. Squibb and Sons de Mexico. In 1955 with Dr. Harvey Blank he published *Viral and Rickettsial Diseases of the Skin, Eye, and Mucous Membranes of Man*. Two years ago he visited London and returned once more to his old medical school.

Diary of the Week

MAY 4 TO 10

Sunday, 4th

UNIVERSITY COLLEGE HOSPITAL, Gower Street, W.1
10.15 A.M. Meeting for general practitioners, arranged by the consultant staff of the Royal Ear Hospital, on Common E.N.T. Troubles in General Practice.

Monday, 5th

WRIGHT-FLEMING INSTITUTE OF MICROBIOLOGY, St. Mary's Hospital Medical School, W.2
5 P.M. Dr. Deborah Doniach: Thyroid Auto-immunity and its Clinical Implications.

HUNTERIAN SOCIETY
7.30 P.M. (Talbot Restaurant, London Wall, E.C.2.) Mr. C. R. Rudolf: Hunteriana Part IV.

Tuesday, 6th

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
5 P.M. Prof. H. Rocke Robertson (Vancouver): Observations on Wound Infection. (Moynihan lecture.)

POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12
4 P.M. Dr. F. Avery Jones: Ulcerative Colitis.

INSTITUTE OF DERMATOLOGY, Lisle Street, W.C.2
5.30 P.M. Dr. G. B. Dowling: Scleroderma and Dermatomyositis.

Wednesday, 7th

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5.15 P.M. *History of Medicine*. Sir Arthur MacNalty: Alexander Pope, Poet and Cripple. Mr. W. R. LeFanu: Dr. Arbuthnot.
8 P.M. *Surgery*. Mr. A. D. Wright: Historical Operations. (Presidential address.)

POSTGRADUATE MEDICAL SCHOOL
2 P.M. Dr. Martin Bodian: Pædiatric-neoplastic Disease.

INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Dr. W. D. W. Brooks: Manifestations of Carcinoma of the Bronchus.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. R. W. Riddell: Histological Diagnosis of Fungus Infections.

ASSURANCE MEDICAL SOCIETY
5 P.M. (11, Chandos Street, W.1.) Dr. D. D. Reid: Occupation and Residence in Relation to Expectation of Life.

UNIVERSITY OF OXFORD
5 P.M. (Radcliffe Infirmary.) Prof. William Doolin: Abraham Colles and His Contemporaries. (Litchfield lecture.)

MANCHESTER MEDICAL SOCIETY
4.15 P.M. (Medical School.) Sir Eric James: Education of the Scientist.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH
8.30 P.M. (18, Nicolson Street.) Prof. John Crofton: The Altered Outlook on Tuberculosis.

Thursday, 8th

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. Phyllis Wade: Radiation.

LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool, 3
8 P.M. Dr. E. N. Chamberlain: The African Slave Trade.

HONYMAN GILLESPIE LECTURE
5 P.M. (University New Buildings, Teviot Place, Edinburgh.) Mr. Hugh Dudley: Neuro-endocrine Response to Injury.

UNIVERSITY OF ST. ANDREWS
5 P.M. (Queen's College, Dundee.) Prof. James Walker: Physiological Studies in Human Pregnancy.

Friday, 9th

POSTGRADUATE MEDICAL SCHOOL
10 A.M. Mr. G. K. McKee: Artificial Hip Joints.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
3.30 P.M. Dr. D. A. Osborn: Blood Diseases in Ear, Nose, and Throat Conditions.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH
3.45 P.M. Mr. J. G. Murray: Responses of Nervous Tissue to Injury and Disease, Recent Advances in Knowledge. (Sir David Wilkie lecture.)

Saturday, 10th

MIDLAND THORACIC SOCIETY AND NORTH WESTERN TUBERCULOSIS SOCIETY
11 A.M. (Cheshire Joint Sanatorium, Market Drayton.) Prof. W. F. Gaisford, Dr. H. J. T. Ross: Intra-thoracic Primary Tuberculosis in Children.
4 P.M. Dr. L. Caldwell, Dr. G. R. W. N. Luntz: Pulmonary Tuberculosis and Diabetes Mellitus.

Notes and News

IMPERIAL CANCER RESEARCH FUND

AT the annual general meeting of the Fund on April 29, the annual report [1] was presented. The council has decided to appoint a director, to be in charge of all the Fund's research activities, and Prof. G. F. Marrian has accepted this appointment. Permission was received in January to demolish nos. 44–46, Lincoln's Inn Fields, to make way for new laboratories and offices, for which detailed plans are being prepared.

Among much research reported is a clinicopathological study of prostatic cancer. Three groups of patients are being compared: those who die within three years, whatever the treatment; those treated with hormones and surviving five years or more; and those who survive over five years untreated. It is thought that in the first group the effects of treatment may be non-specific, and due to relief of obstruction or of sepsis, while the survival in the other groups may be due to retardation of growth—by treatment in the second group and by some natural mechanism in the third group. These ideas are being tested by clinicopathological observation of patients, including measurement of hormone excretion in the urine before and after treatment. In more than two-thirds of a group of cases of cancer of breast and prostate, an association is thought to have been found between the clinical course during additive or ablative hormone therapy and the fluctuation in the amount of œstrogen excreted in the urine. The absence of an association may be due to hormone-independence or to stimulation of tumour growth by hormones other than œstrogen.[2] In many cases removal of the gonads, adrenals, and even pituitary did not completely eliminate hormone production; the biological significance of the small amounts remaining is not known.

SOUTHPORT'S NEW MENTAL HOSPITAL

ON April 15, Dr. G. E. Godber, deputy chief medical officer of the Ministry of Health, inaugurated the first phase of Greaves Hall Mental Deficiency Hospital at Banks, near Southport. The new hospital was, he said, a sign of our awakened sense of responsibility for the welfare of the mentally afflicted. Its purpose was not to take people in and keep them for the rest of their lives but to restore as many as possible to life in the community.

The new hospital, which is to cost £3 million and to house 1000 patients, stands on the main Preston-Southport road within easy access of Southport itself and of the industrial area of Merseyside. Since 1939 Greaves Hall, from which the new hospital takes its name, has been used as a mental hospital, and at present it houses 170 patients. The hall itself will later serve as the administrative offices of the new hospital. The patients will be distributed among 20 villas which will be scattered over the 150-acre estate. 4 villas have already been built and 2 are nearly full. It is also intended to build 70 staff houses. The tree-lined avenues, spinneys, coverts, and ornamental gardens of the estate are being preserved wherever possible.

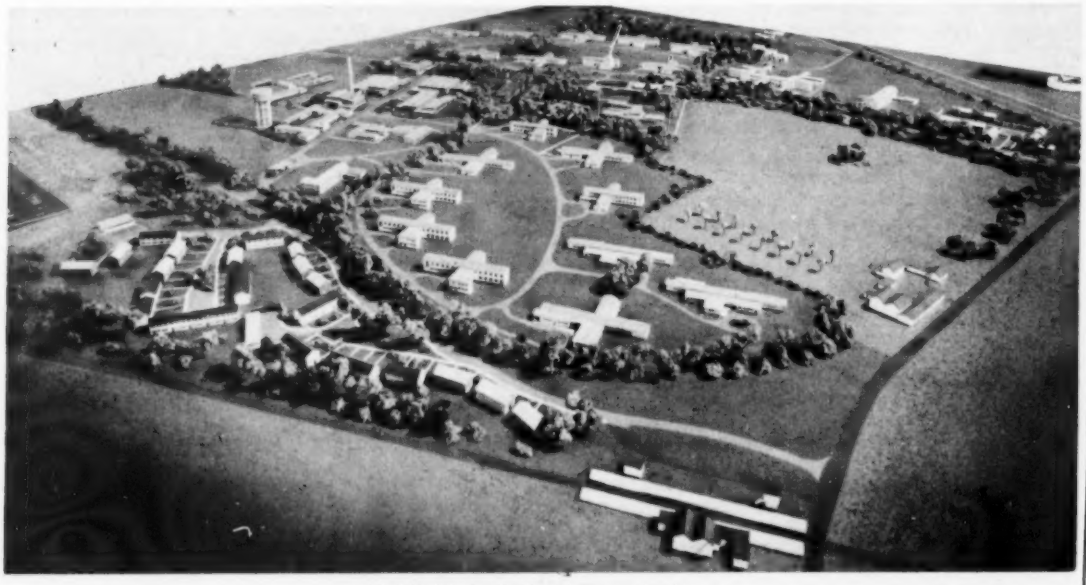
Work on the first phase of the development began in 1955, and besides the 4 villas for patients mentioned above has included a boiler-house, water tower, control point, nurses' home and 28 staff houses. Work on the second phase is expected to begin in the autumn and will include another 8 villas, central kitchens, dining-rooms, laundry, workshops, garages, a school, recreation hall, gymnasium, and farm buildings. The third and final phase will provide more villas for patients and a general hospital for the institution.

MEMORIAL TO KATHLEEN FERRIER

AT a ceremony at University College Hospital on April 24 Sir Henry Dale opened the Kathleen Ferrier extension of the radiotherapy department and unveiled a plaque of the famous singer by Mrs. Mary Gillick. The Kathleen Ferrier Memorial Fund had made possible the extension to this part of the hospital where she was treated, and in addition to contributing to the cost of building and equipment, the Fund also provided for certain technical staff. The equipment in the new extension includes apparatus for studying the effect of oxygen in enhancing the action of radiotherapy for malignant disease.

Sir Henry Dale and Sir Benjamin Ormerod both spoke of the warmth and vitality that had made Kathleen Ferrier so memorable a person, even apart from the beauty of her voice. Sir Benjamin recalled particularly vividly two of her concerts, one at the Royal Festival Hall when she sang in *Das Lied von der Erde*, and another in Manchester when Sir John Barbirolli and Dr. Bruno Walter shared the conducting of *Messiah*. Mr. Myles Formby referred to the distinguished work that had

1. Imperial Cancer Research Fund: Fifty-fifth Annual Report, 1956-57. Issued by the Fund, Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.2.
2. Hadfield, G. *Lancet*, 1957, i, 1058.



Model of the institution when completed.

been done in the radiotherapy department under the direction of Dr. Gwen Hilton and which could now be expanded thanks to the efforts of those who had initiated and supported the Memorial Fund. Among those present at the ceremony were Dame Myra Hess and Mr. Hamish Hamilton.

PHYSICIANS IN CONFERENCE

THE Conference on Anæmia and the Alimentary Tract, to be held by the Royal College of Physicians of London on July 25 and 26, is an interesting departure. In devising this meeting, which, if it proves successful, may be the first of a series, the college has aimed not so much to engage in post-graduate training as to provide a means for the information of consultants, who will be able to exchange views informally; and the details of this first meeting, announced in our advertisement columns this week, make it clear that most of the speakers are themselves furthering knowledge of the subject.

A NEW CAUTIONARY CARD

WE have referred [1] to cards that are, or might be, carried by people with chronic illnesses to warn doctors about their condition in case of emergency; and we suggested that such cards might be used by those taking long courses of such drugs as cortisone, ganglion-blocking agents, and antibiotics. The American Heart Association (44, East 23rd Street, New York 10) has produced a card, designed as a wallet insert, for people having long-term anticoagulant treatment. It specifies the drug that the bearer is having, and his blood-group, and gives advice on what to do in emergency illness or accidents.

University of Oxford

It is proposed to confer the honorary degree of D.SC. on Dr. Arne Tiselius, professor of biochemistry in the University of Uppsala.

University of Edinburgh

Dr. Alan Peters has been appointed lecturer in anatomy.

University of Glasgow

On April 26 the degree of M.D. was conferred on the following:

William McNaught, A. J. O'Hea, and A. A. Robin (*with commendation*); Bernard Camber, Ella I. McNaught.

Dr. M. G. P. Stoker, Huddersfield lecturer in special pathology in the University of Cambridge, has been appointed to the new chair of virology at Glasgow.

Dr. Stoker, who is 39 years of age, studied medicine at Cambridge and St. Thomas's Hospital, qualifying in 1942. After holding a house-appointment at Lambeth Hospital he served with the R.A.M.C. and took part in typhus research in India. In 1947 he became assistant pathologist at Addenbrooke's Hospital, Cambridge. He was appointed to his present lectureship in 1948. He is also director of medical studies and assistant tutor at Clare College. He is a member of the World Health Organisation's expert advisory panel on zoonoses, and his published work includes papers on Q fever and other rickettsial and virus diseases.

National University of Ireland

The following appointments have been made at University College, Dublin:

Dr. T. B. Counihan, professor of medicine; Dr. D. K. O'Donovan, professor of medicine; Mr. Eoin O'Malley, professor of surgery; Mr. P. A. FitzGerald, professor of surgery; Dr. J. W. Harman, professor of pathology; Dr. P. J. Cannon, professor of pharmacology; Dr. Oliver FitzGerald, professor of therapeutics; Dr. P. N. Meenan, professor of microbiology as applied to medicine.

Louis Rapkine Lecture

This lecture will be given by Dr. Jacques Monod of the Institut Pasteur, Paris, on Monday, June 2, at 5.15 P.M., at the Institut Français du Royaume-Uni, Queensberry Place, London, S.W.7. His subject will be the permeases—specific factors of cellular permeability.

1. *Lancet*, 1956, ii, 1143.

Royal College of Physicians of London

At a comitia on April 24, with Dr. Robert Platt, the president, in the chair, the following were elected to the fellowship:

PANDIPEDDI KUTUMBIAH, India; J. O. MERCER, New Zealand; W. F. CONNELL, Canada; J. H. WALTERS, London; S. S. MISRA, India; F. S. BRIEN, Canada; SAUL ADLER, Jerusalem; THOMAS SIMPSON, London; WILLIAM GOLDIE, Leeds; W. A. OLIVER, Norwich; E. JOAN STOKES, London; J. E. CLARKE, Australia; M. A. RUGG-GUNN, London; C. J. C. G. HODSON, London; J. L. PINNIGER, London; URSULA JAMES, London; D. DE LA C. MACCARTHY, Aylesbury, Bucks; J. P. M. TIZARD, London; MARTIN ROTH, Newcastle upon Tyne; A. T. JONES, Liverpool; W. S. PEART, London; H. E. DE WARDENER, London; DAVID STAFFORD-CLARK, London; A. D. CHARTERS, Kenya; P. H. DAVISON, Birmingham; S. C. GOLD, London; M. D. MILNE, London; E. B. ADAMS, South Africa; I. C. K. MACKENZIE, London; S. W. STANBURY, Hale Barns, Cheshire S. T. ANNING, Leeds; D. H. COLLINS, Sheffield; J. S. I. SKOTTOWE, Oxford; C. H. GRAY, London; THOMAS MCKEOWN, Birmingham; J. S. MITCHELL, Cambridge; Sir LINDOR BROWN, London; EDWARD FORD, Australia; Sir HANS KREBS, Oxford.

The following having satisfied the censors' Board were elected to the membership:

B. I. Chazan, M.B. Glasg., Gordon Cohen, M.B. Cantab., G. L. Donnelly, M.B. Sydney, G. H. Fairley, B.M. Oxon., Nellie P. Fernando, M.B. Ceylon, P. N. Francis, M.B. Sydney, Morris Greenberg, M.B. Lond., C. B. Hatfield, M.D. Alberta, T. D. R. Hockaday, B.M. Oxon., R. D. Hyde, M.B. Cantab., J. H. Jones, M.B. Cantab., G. S. McL. Kellaway, M.B. N.Z., R. S. Kocen, M.B. Leeds, Albert Kusklick, M.B. W'srand, P. J. Lachmann, M.B. Cantab., Hermann Lehmann, M.B. Basle, Emanuel Lewis, M.B. Lond., Clifford Mawdsley, M.B. Manc., R. J. Mulhearn, M.B. Sydney, M. J. Pritchard, M.B. Cantab., S. B. Rosalki, M.B. Lond., R. W. Ross Russell, M.D. Cantab., K. F. R. Schiller, B.M. Oxon., Samuel Shuster, M.B. Lond., George Simon, M.D. Cantab., I. D. H. Todd, M.B. Aberd.

Licences to practise were conferred on the following 145 candidates who have passed the final examination of the Conjoint Board:

T. R. Abbott, H. B. Bailey, Richard Barker, J. D. Barrett, J. M. Beeley, J. T. Bench, Colin Derry, N. D'E. G. Best, Biswarup Bhattacharya, Margaret A. Birchall, J. M. Black, Sarah M. E. Blatch, Natalie Bogdan, Mary-Ann M. Bolt, M. C. Bott, Patricia M. Bradford, R. W. Bramwell, J. F. Branton, John Brice-Smith, T. R. Bull, Shirley F. C. Burrell, Christine M. Butler, A. J. G. Campbell, P. A. Carter, Robert Chapple, S. E. Cheah, J. H. Chilman, Daphne C. K. Clarke, Marion Coates, R. D. Cohen, D. M. A. Cowie, Sheila M. Crawshaw, R. H. I. Crockatt, Patricia E. Crome, P. G. Darby, A. H. Davies, Ann V. Daws, D. D. Devine, E. F. Doleman, H. S. Donnelly, E. E. Douek, Jean G. Doughty, D. C. Dukes, J. G. Edwards, L. A. Emanuel, E. R. Emmanuel, Geoffrey Evans, Patricia Farren, F. J. Fawcett, A. V. Fox, Ruth Frank, Isidore Freedman, P. M. Fullman, Ramon Gaertner, J. R. Geddes, D. W. R. George, G. R. Gerson, D. H. Gill, M. J. Goggin, Bernard Goodhead, Dorothy R. Gordon, A. J. Gregory, Janet M. Guenault, K. C. Hammond, J. T. Harries, J. S. G. Hayes, G. D. Hayter, Elizabeth M. Hedges, Gillian C. Henly, J. R. Heron, A. B. Hewitt, N. F. Hill, L. J. Hipkin, Michael Hopwood, Judith Hornung, G. R. Horton, Margaret E. Hughes, D. J. Hunt, G. B. Hunt, D. A. Hutchinson, Sheila M. V. Jeffery, R. D. T. Jenkin, G. I. John, G. W. Jones, J. F. Kane, W. E. Kearns, Delia M. Kenyon, J. O. Kilby, K. G. Korsah, Oboadum Kusi-Mensah, Hilary R. G. Lennox, A. J. Lupin, D. R. McCoy, Antony Magrath, R. T. F. Maguire, G. M. Makhlouf, John Martin, D. R. Matthes, June Mills, A. B. Morphy, Evelyn J. Moss, Frances A. Musson, C. R. Neequaye, David Negus, A. D. Noble, C. F. W. Palmer, A. J. Pechal, Norman Peters, Elizabeth J. Porter, Arnold Powell, P. R. Preston, J. D. Price, B. J. Prout, D. J. Puddifant, C. D. P. Rhodes, Margaret Richardson, H. P. Rikard-Bell, C. J. Roberts, E. J. R. Rossiter, Naomi J. Sage, M. D. Sidell, J. B. Sorapure, B. R. Sparke, C. G. Stephenson, Pamela M. Stracey, R. C. Swan, M. H. Sykes, M. A. E. Symonds, D. J. E. Taylor, B. M. Thomas, J. L. E. W. Thomas, Winifred Tooby, J. C. Uzoma, C. W. Venables, M. T. Ward, Judith C. R. Wardle, Dorothy West, A. J. Whitley, Barbara J. Willmer, D. N. Wood, W. D. R. Writer, J. D. Wyatt, Shing Yiu Yip, D. A. Young, J. E. Godrich.

The following diploma and those mentioned in our issue of April 26 (p. 918) were conferred jointly with the Royal College of Surgeons:

D.C.H.—G. P. Anthony, C. P. Anyon, Mary C. Armstrong, Saraswati Arora, Kanchana Arunlakshana, C. S. Ayoub, P. A. Barker, Norman Beenstock, Edith Bergel, Marjorie L. Bowen, K. D. Boyd, Marjory H. Boyle, Margaret E. Broughton, Alison G. H. Brown, T. F. Bushby, Josephine H. Calder, Enid G. Carson, H. J. W. Cleeve, Iain Crawford, Martha E. N. Davies, Hymie Davis, W. S. de Silva, Patricia A. Dinkel, Patricia J. Dockery, Sheila M. Foster, Lise L. Fowle, Gillian M. Gandy, M. B. Gee, S. S. Ghatak, D. C. Gill, Catherine E. Hall, S. M. Haneef, B. R. Hardwick-Smith, Audrey M. Hillary, Badruddin Ibrahim, Constantinos Ioannou, M. L. M. Izzadeen, R. B. Jahina, C. R. Jayachandra, Emily M. Kerr, Hilda Koilpillai, Kathleen M. Laing, Kathleen M. Lamont, Alice Latham, H. A. McClelland, Kathleen L. MacGregor, Irene E. McLaren, Dorothy Mainwaring, J. R. MacG. Millar, J. N. S. Mitchell, Wendy L. Mitchener, Y. P. Narula, E. I. F. Nqshawat, P. O. Nicholas, N. J. O'Doherty, M. J. Page, Dolly I. Pakshong, Kiramathypathy Paramathypathy, F. B. W. Parker, M. D. Parker, M. W. Partington, Veronica Pearson, J. D. W. Peck, Valerie J. Perkins, T. G. J. Phillips, Philine T. Pieris, Mavis M. Polkinghorne, Srijayadevi Ponnudurai, Dorothy H. E. Ramsay, S. K. Ray, Pamela A. M. Rendell, Raine E. I. Roberts, Jill P. Rosser, S. K. Roy, Sophie Sash, Promod C. Sharma, Maxwell Shavitsky, W. H. Shaw, P. F. Sheppard, M. H. Lees, S. L. Shrikhande, J. A. B. Spalding, J. N. Standring, Harry Stark, Averil M. Stedeford, R. McK. Sutherland, K. H. Tan, Frances C. Thomson, Elizabeth M. Tilsen, M. W. Tisdall, Anne E. Treharne, Y. K. Tseung, Pia M. Unger, S. K. Vohra, Barbara Ward, Jean M. Watkins, M. A. Wenig, Catherine M. White, R. G. M. Whittaker, R. M. Whittington, Amarapala Wijenaike, Frank Wilson, Maidie E. Wilson, S. E. A. Wyner, Pamela M. Zinkin.

On Tuesday and Thursday, May 13 and 15, at 5 P.M. at the college, London, S.W.1, Dr. Paul Wood will give the Croonian lectures. His subject will be the Eisenmenger syndrome, or pulmonary hypertension with reversed central shunt.

Royal College of Obstetricians and Gynæcologists

The following have been awarded the D.OBST.:

Elizabeth K. Adam, Jean M. Adams, Isobel A. C. Alexander, N. K. Allahbadia, Hilary Allin, I. M. Allison, Helen M. Amsbury, J. T. Andrews, Christos Angeli, Maureen C. Archer, Lyn Ashworth, David Barry, M. K. Basu Mallik, D. H. Bayton, P. J. Bekenn, J. D. L. Bell, Caroline M. Benazon, Brenda L. Bodenham, Anne Bowles, N. M. Brown, K. W. Browne, V. R. Bruce, G. O. D. Busby, Catherine G. Butcher, Anne L. Campbell, W. J. Carter, Georgina M. Chadwin, S. K. Chaudhuri, Jay-Gopal Chitnis, Jean E. Clark, B. S. Clarke, Evelyn Coates, John Colville, Robert Condie, Joseph Connolly, P. L. Cook, F. B. Cookson, M. N. Cox, John Crook, D. R. Das, I. A. Davies, J. J. De Jode, B. G. Dudley, Ma Tin E, M. O'N. East, S.K. El Deiry, D. H. Elliott, C. D'A. Ellis, P. M. Elwin, I. M. Evans, Mary D. Evans, Elizabeth M. Everard, Geoffrey Fearnley, Michael Galton, E. F. D. Gawne, Marie P. Gilbert, Margaret G. Gillan, Mary R. Glyn John, H. E. Godfrey, A. W. Gostling, J. H. Graham-Marr, J. D. Granger, B. H. Grant, Lionel Grant, A. J. Gray, C. P. Gray, A. H. Gretton, N. D. Gripper, Mary E. Habgood, R. A. Harlow, Shaukat Haroon, D. M. Harris, D. T. Harrison, B. H. P. Heber, Jon Henderson, J. R. Hobbs, C. J. Hopkins, T. W. Hoskins, W. D. Jeans, Elizabeth M. Jewell, G. K. Jivani, E. R. Johns, E. T. Johns, R. H. Johnson, G. W. Johnston, J. D. Jones, J. R. Jones, W. R. B. Jones, Niva Josh, S. K. Kataria, D. H. Kay, T. J. King, R. N. Kolah, Pamela F. Kordik, M. R. Landeg, J. S. Lawson, R. C. Lawson, A. F. Lee, J. D. Le Souef, Jean Y. MacDougall, J. C. H. McDonald, Janie M. McIntyre, J. W. McLellan, Anne M. Macgillivray, Joseph Main, G. S. Mandal, Charles L. Mansfield, G. N. Marsh, I. B. Martin, A. T. Mathew, R. H. Mathews, Paul Maton Terry, A. G. May, A. MacG. Michael, Dennis Milner, R. R. W. Mirrey, Shyamal Mitra, S. C. Moles, H. S. C. Moore, J. A. Morgan, Myfanwy C. R. Morris, C. I. Moss, S. D. Mulye, J. K. Murphy, Mary A. B. Murray, F. J. Nash, J. E. Newcombe, E. H. Noble, Ma Khin Nu, Liam J. O'Brien, A. H. Padsha, Joyce M. Pallett, I. W. Palmer, M. S. K. Palmer, J. C. Parkes, P. N. Paterson-Brown, A. J. Pearce, T. N. Pearson, W. F. Perera, Valerie J. Perkins, I. S. T. Phillpotts, G. E. Pickup, G. G. Pollock, D. R. Pratt, O. H. Proctor, Sheila G. Quain, John Quantrill, J. C. Ramsay, D. A. Richardson, E. H. Ritchie, Elizabeth R. J. Ritchie, G. C. Rivett, O. W. Samuel, C. R. Salisbury, B. E. Sayers, Bryan Scaife, P. H. Scott, S. K. Seal, Monica Shackleton, D. Y. Sharples, C. D. G. L. Shimmin, Vasanti Sikand, A. W. Simpson, Catherine I. Soutter, M. G. Spark, J. M. Spence, W. L. P. Spicer, Averil M. Stedeford, S. J. Steele, M. D. B. Stephens, Geoffrey Stout, D. S. Strachan, M. K. Strelling, C. E. Strode, Margaret J. D. Sturges, B. B. Taylor, Murugasoo Thillainayagam, A. A. L. Thomas, Vincent Tonge, K. H. Trigg, Wanda Trowsdale, Jean M. Turpin, M. S. Tyrell, C. E. Upton, P. C. Vivian, Marguerita A. M. Von Bergen, G. B. Walker, Audrey P. Ward, Howard Watson, Patricia J. Whelan, M. T. White, D. A. Whiting, William Whittingham, B. R. Wilkinson, C. W. L. Williams, D. T. A. Williams, D. G. Williams, M. G. Williams, M. J. Williams, R. D. Williams, D. J. Willsher, A. S. Wilson, J. H. Winder, B. J. Wright, J. A. Wright, J. D. Wrighton, Joyce O. Yates, R. C. Young.

Queen's Institute of District Nursing

This institute will hold a conference at Church House, Westminster, S.W.1, on Tuesday, May 6, at 2.30 P.M., when Dr. J. A. Gillet and Dr. John Fenton will speak on ageing and the over-60's and schemes for the employment of elderly people.

Institute of Child Health, London

On Tuesday, May 27, Dr. G. M. Guest, of the Children's Hospital Research Foundation, Cincinnati, will give a lecture on studies of insensible weight loss, and on Tuesday, June 24, at 5 P.M. Prof. J. H. P. Jonxis, professor of pædiatrics at the State University, Groningen, will speak on diseases due to abnormal hæmoglobins. The Simpson Smith lecture will be given on Wednesday, July 23, by Dr. W. J. Potts, surgeon in chief of the Children's Memorial Hospital, Chicago. His subject will be congenital atresia of the œsophagus. All the lectures will be given at 5 P.M. at the Institute, The Hospital for Sick Children, Great Ormond Street, W.C.1. Tickets for the Simpson Smith lecture may be had from the dean of the institute.

Wellcome Trust

Among the grants totalling £108,630 sanctioned by the Wellcome Trustees for the half-year ended March 31, 1958, were the following:

Institute of Cancer Research, University of London.—£40,000 for the cost of including a Wellcome Laboratory of Pharmacology and Experimental Chemotherapy in the proposed extension of the Chester Beatty Research Institute.

Government of Kenya.—Up to £10,000 for the cost of adding a Wellcome Research Library to the Medical Research Laboratories at Nairobi.

Nuffield Department of Surgery, University of Oxford.—About £16,500 for the purchase of a Gibbon-Mayo heart-pump for use in research on the surgery of the heart.

Department of Pharmacology, University of Sydney, New South Wales.—About £3000 for a scintillation spectrometer for work with radioisotopes.

Department of Pharmacology and Therapeutics, University of Manitoba, Winnipeg.—£13,000 to provide the stipend of a Wellcome research fellow for six years.

International Congress of Balneology

This congress will be held in Marienbad, Czechoslovakia, from Sept. 8 to 13. Further particulars may be had from the secretary of the congress, Reznická 5, Prague 2, Czechoslovakia.

Institute of Hospital Administrators

The Institute is holding its annual conference in London, in conjunction with the International Hospital Equipment and Medical Services Exhibition, from May 5 to 7 at the Empire Hall, Olympia. Further particulars may be had from the secretary of the Institute, 75, Portland Place, W.1.

Electrophoresis in Clinical Biochemistry

The southern region of the Association of Clinical Biochemists and the Society for Analytical Chemistry will hold a joint meeting on this subject on Wednesday, May 7, at 7 P.M. at Burlington House, Piccadilly, London, W.1. The speakers will be Prof. N. H. Martin, Dr. W. G. Dangerfield, and Dr. A. L. Latner.

Rockefeller Foundation Grants

During the first quarter of 1958 the Foundation distributed $4,300,000. Grants for medical education and public health amounted to $910,000, and for biological and medical research $576,000. The grants include $33,500 to the Welsh Regional Hospital Board (over five years) to continue aid for research on the biochemistry of the nervous system under Dr. Derek Richter at the Neuro-psychiatric Research Centre at Whitchurch Hospital.

British Association of Physical Medicine

At the Association's annual dinner, held in London on April 25, Prof. Robert Platt, P.R.C.P., remarked that one of its objects was the achievement and maintenance of physical fitness. He owned that his own idea of physical sport was a good hard game of chess: health must not be confused with strength. Continuing more seriously, he said that, with the growth of knowledge and techniques, specialisation was inevitable; but specialisation should not interfere with the relation of patient to doctor, which belonged to the art of medicine and not to any particular specialty. Today medicine was more satisfying than ever before, because so much of science was at its command. There used to be much humbug. Now there was no need for pretence: the profession could be frank about what it knew and what it did not know. Professor Platt observed that if he had to found a new society (which, he added, heaven forbid) he would name it SAGIM—the Society for the Abolition of Gloom in Medicine. The National Health Service had its faults; but it should not be blamed for everything. Dr. Philippe Bauwens, the president, responding to Professor Platt's toast of The Association, reported that this had had a good year. Dr. Hugh Burt spoke well of The Guests; and Dr. Ian Grant, president of the College of General Practitioners, responded.

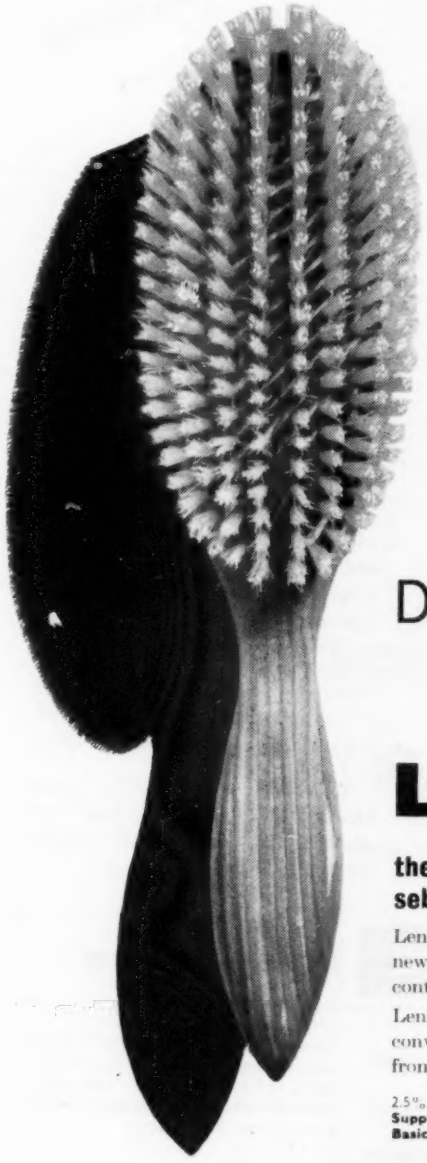
Sir Oliver Franks has been appointed chairman of the board of governors of the United Oxford Hospitals.

Prof. Richard Ellis and Dr. Bernard Schlesinger are visiting Turkey, under the auspices of the British Council, to attend the National Seminar on Child Health Problems.

A meeting of the West Midlands Physicians Association will be held at Burton-on-Trent General Hospital on Saturday, May 31, at 11 A.M.

The Society for Music Therapy and Remedial Music, which has been set up to promote the use of music in the treatment, training, and reablement of children and adults with emotional, physical, or mental handicaps, is holding its first meeting this Saturday, May 3, at 3 P.M. at Overseas House, Park Place, St. James' Street, London, S.W.1. Prof. W. A. Robson is the chairman and the hon. secretary is Miss Juliette Alvin (6, Westbourne Park Road, W.2.)

A booklet, containing abstracts of papers submitted for the Benger prizes for original observations in general practice, has been published by Benger Laboratories, Ltd. Copies (5s.) may be had from the College of General Practitioners, 54, Sloane Street, London, S.W.1; proceeds from the sale of the book will be passed to the college.



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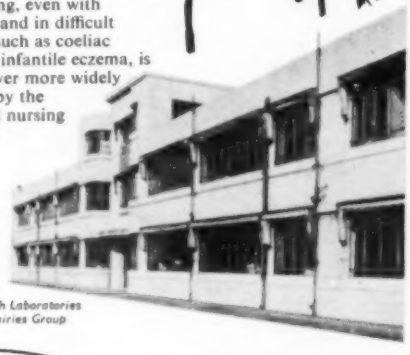

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The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

CONFERENCE ON ANÆMIA AND THE ALIMENTARY TRACT

It is proposed to hold at the College a Conference on this subject on 25TH AND 26TH JULY, 1958. It is primarily arranged for Fellows and Members of the College who are Consultants in medicine or pathology. Numbers may have to be limited and applications should be made to the Registrar not later than 14th June. Entrance fee, 3 guineas, which will include lunches and dinner, should accompany applications. The provisional programme is as follows:—

Friday, 25th July:
President's opening remarks.
Lesions of the mouth and throat in anæmia (R. Asher, London).
Aphthous stomatitis and the syndromes of Behcet, Sjögren and Stevens-Johnson (W. Sircus, Edinburgh).
Anæmia and œsophageal lesions (T. D. Kellock, London).
The morbid anatomy of the stomach in anæmia (H. A. Magnus, London).
Gastric and intestinal biopsy (Margot Shiner, London).
Exfoliative cytology of the stomach (R. O. K. Schade, Newcastle).
Lunch
Diagnex tests and uropepsinogen in the study of gastric secretion (K. B. Taylor, Oxford).
The augmented histamine test (A. W. Kay, Glasgow).
Newer techniques in the investigation of anæmia:
I. Serum iron and radioactive iron (Sheila Callender, Oxford).
II. Serum vitamin B_{12} and radioactive vitamin B_{12} (D. L. Mollin, London).
III. Folic acid (J. V. Dacie, London, I. Chanarin, London).
Dinner

Saturday, 26th July:
Cœliac disease (W. P. H. Sheldon, London).
Adult steatorrhœa (W. T. Cooke, Birmingham).
Stenosis, anastomosis and diverticulosis of the small intestine (J. Badenoch, Oxford).
Treatment of iron deficiency (P. B. B. Gatenby, Dublin).
Treatment of the megaloblastic anæmias (L. J. Davis, Glasgow).
Treatment of steatorrhœa (C. F. Hawkins, Birmingham).
Lunch
The occult blood test (G. Discombe, London).
Anæmia after gastric operations (L. J. Witts, Oxford).
Unexplained alimentary bleeding (F. Avery Jones, London).
General discussion on anæmia and the alimentary tract (The President, W. I. Card, W. T. Cooke, J. V. Dacie, G. Discombe, F. Avery Jones, L. J. Witts).

HAROLD BOLDERO, Registrar.

Pall Mall East, S.W.1.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

The next EXAMINATION for the MEMBERSHIP will commence on MONDAY, 30TH JUNE, 1958.

Prospective candidates are asked to note that entries accompanied by the certificates, testimonials and the examination fee of 15 guineas as required by the by-laws must reach the College not later than first post on Monday, 2nd June, 1958. Candidates must have been qualified for 18 months.

Candidates who propose to submit published work under the regulations are required to give 28 days' notice, and should apply in writing to the Registrar, without delay, for detailed instructions as to the procedure they should follow. Completed entries for published work must also reach the College not later than first post on Monday, 2nd June, 1958.

HAROLD BOLDERO, D.M., Registrar.

12, Pall Mall East, London, S.W.1.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

PAUL HAMILTON WOOD, O.B.E., M.D., F.R.C.P., will deliver the CROONIAN LECTURES on TUESDAY, 13TH MAY, and THURSDAY, 15TH MAY, 1958, at 5 P.M., at the College, Pall Mall East, S.W.1.

Subject: "The Eisenmenger Syndrome, or pulmonary hypertension with reversed central shunt".

Any member of the medical profession admitted on presentation of doctor's card.

By order of the President.

HAROLD BOLDERO, Registrar.

UNIVERSITY OF LONDON

BRITISH POSTGRADUATE MEDICAL FEDERATION
INSTITUTE OF NEUROLOGY
(Queen-square)

COURSE FOR CONSULTANTS—CHANGE OF DATE

Will those interested please note that the ONE-DAY COURSE FOR CONSULTANTS on "Aberrations of Consciousness" previously announced as being held on SATURDAY, 28TH JUNE, 1958, will be held instead on SATURDAY, 5TH JULY, 1958.

UNIVERSITY OF BRISTOL

DIPLOMA IN PUBLIC HEALTH
SESSION 1958–1959

A full-time COURSE OF INSTRUCTION covering 3 academic terms will commence in OCTOBER, 1958.

The fee for the full course is £66.

Application forms may be obtained from The Medical Postgraduate Dean, The University, Bristol, 8, and should be lodged as soon as possible.

UNIVERSITY OF GLASGOW

SESSION 1958–59
DIPLOMA IN PUBLIC HEALTH

A COURSE OF INSTRUCTION covering 3 Academic Terms will commence in OCTOBER, 1958.

The fee for the full course (including examination fee) is £70.

Application forms may be obtained from the Dean of the Faculty of Medicine, The University, Glasgow, and should be lodged not later than 30th June, 1958.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

COUNCIL ELECTION

Friday, 18th April, was the last day on which the names of candidates were to be received for the election of Members of the Council, which will take place on 3RD JULY. 10 nominations have been forwarded to the Secretary by candidates seeking to fill the 4 vacancies occasioned by the retirement, in rotation, of Sir Harry Platt, Mr. A. Hedley Whyte, Mr. E. W. Riches, and Sir Arthur Porritt.

1. Angus Hedley Whyte, D.S.O., T.D., Royal Victoria Infirmary, Newcastle-on-Tyne. (Fellow 1924.) Council 1950–58.
2. Eric William Riches, M.C., Middlesex Hospital. (Fellow 1927.) Council 1950–58.
3. Sir Arthur Espie Porritt, K.C.M.G., K.C.V.O., C.B.E., St. Mary's Hospital. (Fellow 1930.) Council 1950–58.
4. Rodney Honor Maingot, Royal Free Hospital. (Fellow 1920.)
5. Douglas William Claridge Northfield, The London Hospital. (Fellow 1928.)
6. John Cridlan Barrett, V.C., T.D., Leicester Royal Infirmary (Fellow 1928.)
7. Leslie Norman Pyrah, Leeds General Infirmary. (Fellow 1929.)
8. Robert Victor Cooke, Bristol Royal Hospital. (Fellow 1929.)
9. Frank Wild Holdsworth, Sheffield Royal Infirmary. (Fellow 1930.)
10. Edward Grainger Muir, King's College Hospital. (Fellow 1931.)

KENNEDY CASSELS, Secretary.

Lincoln's Inn-fields, London, W.C.2.

THE WRIGHT-FLEMING INSTITUTE OF MICROBIOLOGY

ST. MARY'S HOSPITAL MEDICAL SCHOOL, LONDON, W.2

The Third ALMROTH WRIGHT LECTURE will be given by Prof. J. R. SQUIRE, M.D., F.R.C.P., University of Birmingham, in the lecture theatre of the above Institute on MONDAY, 12TH MAY. Subject: "Hypogammaglobulinæmia: Clinical and Laboratory Studies on the Gamma Globulins."

The lecture is open to all members of the medical profession and to all students in medical schools without fee.

THE UNIVERSITY OF MANCHESTER

FACULTY OF MEDICINE

DIPLOMA IN DIAGNOSTIC RADIOLOGY. (R.C.P. AND S.ENG.)

A COURSE OF INSTRUCTION for the above Diploma will commence in MID-OCTOBER, 1958, and extend over a period of 2 years. The course is full-time, non-resident; inclusive fee £60.

Applications are invited from registered medical practitioners who fulfil the requirements as to previous medical experience laid down by the Examining Board in England (D.M.R.D.); regulations obtainable from the London Conjoint Board, 8–11, Queen-square, London, W.C.1.

Application should be made to the Dean of Postgraduate Medical Studies, the University of Manchester, not later than 19th May, 1958.

UNIVERSITY OF MANCHESTER

DIPLOMA IN MEDICAL RADIOTHERAPY (R.C.P. AND S.ENG.)

A COURSE OF INSTRUCTION IN RADIOTHERAPY, in training for the Diploma, will begin at the Christie Hospital and Holt Radium Institute, Manchester, on MONDAY, 6TH OCTOBER, 1958. This will continue until the end of JULY, 1959, after which students without previous experience recognised by the Joint Colleges must still spend a further 14 months working either in the Holt Radium Institute, or in the Radiotherapy Department of some other recognised Hospital. The course is full-time and non-resident. The inclusive fee is £60.

Applications are invited from registered medical practitioners who fulfil the requirements as to previous medical experience laid down by the Examining Board in England. (D.M.R.T. regulations obtainable from the London Conjoint Board, 8–11, Queen-square, London, W.C.1.)

Applicants from Great Britain may be eligible for Senior House Officer appointments. Special consideration will be given to candidates possessing a higher qualification in medicine or surgery, and Registrar appointments may be available for such candidates.

Further information may be obtained from Dr. RALSTON PATERSON, Director, Christie Hospital and Holt Radium Institute, Wilmslow-road, Manchester 20, or from the Dean of Postgraduate Medical Studies, the University, Manchester 13. Applications should be sent to Dr. RALSTON PATERSON not later than Monday, 9th June, 1958.

MENTAL HEALTH RESEARCH FUND FELLOWSHIPS

Applications are invited for MENTAL HEALTH RESEARCH FUND FELLOWSHIPS from suitably qualified persons wishing to pursue Full-time Research Work bearing on problems of mental health whether in clinical psychiatry or in one of its supporting sciences.

Both Junior and Senior Fellowships are offered in the salary ranges £700–£1200 and £1200–£2000, plus superannuation. The appointments will be for up to 3 years in the first instance.

Application forms, which must be returned before 1st October, 1958, may be obtained, together with further information, from the Secretary, Research Committee, Mental Health Research Fund, 39, Queen Anne-street, London, W.1 (Tel.: WELbeck 1272).

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL. A vacancy exists for an ASSISTANT in the Department of Bacteriology. Duties include teaching and virus research under the direction of the Professor. A medical qualification is desirable but previous research experience is not essential. Commencing salary range £960–£1100 p.a., plus superannuation.

Applications, stating age, qualifications, &c., to the Secretary, University College Hospital Medical School, University-street, London, W.C.1.

EMPIRE RHEUMATISM COUNCIL. Applications are invited for an EMPIRE RHEUMATISM COUNCIL FELLOWSHIP at a salary according to qualifications and experience, of up to £1500 p.a., renewable annually for a period of 3 years, to prosecute research in the field of rheumatism. Medical or scientific qualifications are needed.

Applications, stating age, qualifications and experience, together with details of proposed research, in triplicate, should be sent, with the names of 2 referees, to the General Secretary, Empire Rheumatism Council, Faraday House, 8/10, Charing Cross-road, London, W.C.2, before 31st May, 1958. Further information available on application to the above.

EMPIRE RHEUMATISM COUNCIL. Applications are invited for 2 TRAVELLING FELLOWSHIPS tenable for up to 1 year, to prosecute research on some aspect of the Rheumatic Diseases. Medical or scientific qualifications are required. Salary according to qualifications and experience, but not less than £1000 p.a. (for lesser period than 1 year, pro rata).

Applications, stating age, qualifications and experience, should be sent in triplicate, with the names of 2 referees, not later than 31st May, 1958, to the Acting General Secretary, Empire Rheumatism Council, Faraday House, 8/10, Charing Cross-road, London, W.C.2.

UNIVERSITY OF ABERDEEN. Applications are invited for a SENIOR LECTURESHIP, and either a SENIOR LECTURESHIP or a LECTURESHIP, IN SURGERY, with appropriate clinical status in Aberdeen Hospitals. Salaries: Senior Lecturer £1950–£2550 with possible maximum £2700; Lecturer £900–£1900, with suitable placing in each case. Child allowance and F.S.S.U.

Particulars from the Secretary, The University, Aberdeen, with whom applications (15 copies) should be lodged not later than 30th May, 1958.

UNIVERSITY OF CAMBRIDGE. Applications for the post of ASSISTANT IN RESEARCH in the Department of Human Ecology vacant from 1st October, 1958, or as soon as possible thereafter. The person appointed will be expected to engage in research in the field of national and international vital statistics and to give assistance with the design and analysis of a wide range of medical research projects. Applicants should be graduates in mathematics, mathematical statistics, or statistics; those expecting to graduate in the coming summer will be considered. Salary scale £650–£25–£850 with superannuation benefits and family allowance where applicable.

Further particulars and information may be obtained from Dr. G. A. GRESHAM, Secretary of the Appointments Committee of the Faculty of Medicine, The Medical School, Tennis Court-road, Cambridge, to whom applications should be sent to reach him not later than 30th July, 1958.

UNIVERSITY OF EDINBURGH. Department of Bacteriology. Applications are invited for the post of LECTURER in the Department of Bacteriology. The successful applicant will be expected to act mainly as an Assistant Bacteriologist in the Royal Infirmary of Edinburgh. Salary scale £900–£100–£1300; bar: £1400–£100–£1900 p.a., with placement according to qualifications and experience, and with superannuation benefit and family allowance where applicable. The person appointed will be expected to take up duty on 1st October, 1958.

Further particulars may be obtained from the undersigned, with whom applications (6 copies), giving the names of 2 referees, should be lodged not later than 31st May, 1958.

CHARLES H. STEWART, Secretary to the University.

April, 1958.

UNIVERSITY OF ST. ANDREWS. Eastern Regional Hospital Board. The University Court of the University of St. Andrews and the Eastern Regional Hospital Board invite applications for appointment as SENIOR LECTURER IN BACTERIOLOGY in Queen's College, Dundee, University of St. Andrews. Salary, £1900–£100 p.a.–£2500–£50–£2550, F.S.S.U. The person appointed will receive an honorary appointment from the Eastern Regional Hospital Board as Assistant Bacteriologist with the status of Consultant. Family allowance; grant towards expenses of removal.

Applications (16 copies), with names of 3 referees, to be lodged with the undersigned not later than 24th May, 1958.

PATRICK CUMMING,
Joint Clerk to the University Court,
April, 1958. Queen's College, Dundee.

THE QUEEN'S UNIVERSITY OF BELFAST invites applications for a LECTURESHIP IN MENTAL HEALTH, from 1st October, 1958. The salary will be in the range £1300–£50–£2100, with provisions for superannuation. Initial placing on the salary scale will depend upon experience and qualifications. In certain circumstances the salary may rise to £2250. A special interest in and experience of the physiological and biochemical approach to the problem of mental illness would be desirable.

Applications should be submitted not later than 31st May, 1958. Further particulars may be obtained from G. R. COWIE, M.A., LL.B., J.P., Secretary.

UNIVERSITY OF THE WITWATERSRAND, Johannesburg, South Africa. Applications are invited for appointment to the CHAIR OF ANATOMY. The Professor of Anatomy will also be the Head of the Department of Anatomy. Duties are to be assumed on 1st January, 1959, or as soon as possible thereafter. The salary attached to the post will be according to the scale £1950–£50–£2250 p.a. In addition a person with dependants will be paid a temporary cost-of-living allowance at the rate prescribed from time to time by the Union Government (the present rate for a married man is £234 p.a.). Membership of the University Institutions Provident Fund is compulsory and involves a contribution at the rate of 7½ of the substantive salary. Membership of the Staff Medical Aid Fund is obligatory in the case of an officer who qualifies in terms of the rules.

Applicants are advised to obtain a copy of the information sheet relating to this vacancy from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. The closing date for the receipt of applications, in South Africa and London, is 16th June, 1958.

UNIVERSITY OF LEEDS. UNITED LEEDS HOSPITALS. Applications are invited for the post of SENIOR REGISTRAR AND TUTOR IN ORTHOPÆDICS.

Applications (3 copies), stating date of birth, qualifications and details of present and previous appointments, with dates, and experience of teaching, together with the names of 3 referees, should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 19th May, 1958.

UNIVERSITY OF CAPE TOWN. Provincial Administration of the Cape of Good Hope. JOINT MEDICAL STAFF. Applications are invited for appointment to the CHAIR OF OBSTETRICS AND GYNÆCOLOGY at the University of Cape Town. The appointment is a full-time one and is subject to the terms of the joint agreement entered into between the University of Cape Town and the Cape Provincial Administration.

The salary attached to the post is either:

(*a*) £1600–£100–£2000 p.a. with the right of limited private practice; or

(*b*) £2688 (fixed) p.a. without the right of private practice.

In either case a temporary cost-of-living allowance, at present £234 p.a., is payable in certain circumstances.

Applications should state age, qualifications, experience, publications and research interests, and give the names of 2 referees whom the University may consult. 2 copies of the application must reach the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1 (from whom a memorandum giving the conditions of appointment must be obtained), by 7th June, 1958. A third copy must be sent direct by airmail to the Registrar, University of Cape Town, Private Bag, Rondebosch, Cape Town, South Africa, by the same date.

The University reserves the right to make an appointment under either of the conditions above, or to make no appointment or to make an appointment other than from applications received in response to this advertisement.

Hospital Services: Senior Appointments

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of Part-time CONSULTANT OBSTETRIC AND GYNÆCOLOGICAL SURGEON to the Hospital. The appointment becomes vacant on 1st October, 1958. A higher qualification in surgery is essential. The successful candidate will be required to attend on 5 half-days weekly.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the undersigned by 19th May, 1958. H. BRIERLEY, House Governor.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. 2 ASSISTANT PSYCHIATRISTS for 5 half-days a week (Senior Hospital Medical Officer grade), Tavistock Clinic, 2, Beaumont street, W.1

Good general experience in psychiatry, training in psychoanalysis and experience in psychoanalytic methods, especially group therapy and supervision of casework of allied professional groups, required. D.P.M. an advantage. Clinic may be visited by direct appointment.

Application forms obtainable from and returnable to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, before 9th June, 1958.

ROYAL FREE HOSPITAL. Applications are invited from registered medical practitioners for the appointment of Part-time CONSULTANT SURGEON to the E.N.T. Department. Applicants must be Fellows of the Royal College of Surgeons (England). Appointment to commence 1st October, 1958. Salary and conditions of service in accordance with those laid down by the Ministry of Health.

Applications, giving details of experience and accompanied by the names of 3 referees, should be sent to the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, not later than 7th June, 1958.

ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications are invited for the post of Part-time CONSULTANT SURGEON in the Orthopædic Department. The appointment is tenable from 1st January, 1959, and is for 4 to 6 sessions per week. Candidates must be in possession of the F.R.C.S. (England).

Applications (12 copies), together with the names of 3 referees, should be submitted to the undersigned within 28 days.

C. C. CARUS-WILSON, Clerk to the Governors.

ST. MARY'S HOSPITAL, W.2. Part-time Consultant in Obstetrics and Gynæcology. Applications invited from members of the Royal College of Obstetricians and Gynæcologists and Fellows of a Royal College of Surgeons or Masters of Surgery. Successful candidate required to undertake up to 6 notional half-days per week, from 1st October, 1958. The Gynæcological Department is at the Samaritan Hospital, Marylebone-road, and the Obstetric Department is at St. Mary's Hospital.

Applications (12 copies), giving full details, together with names and addresses of 3 referees, should be sent not later than 14th June, 1958, to the House Governor, St. Mary's Hospital, London, W.2.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications are invited for the appointment of CONSULTANT RADIOLOGIST in the X-ray Diagnostic Department from 1st October, 1958, to attend 7 half-days a week. The successful candidate will be required to reside within 10 miles of University College Hospital.

Applications (12 copies), with the names of 3 referees, to T. F. W. MACKEOWN, Administrator and Secretary, by 24th May, 1958.

NEWCASTLE REGIONAL HOSPITAL BOARD. Physician (Senior Hospital Medical Officer status), whole-time or maximum part-time, for Geriatric Unit, Sunderland Group of hospitals. Total geriatric beds 497, primarily at Sunderland General (217); Ryhope General (96); Lecholme (152); Boldon Hospital (32).

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, within 28 days.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Senior LOCUM TENENS POSTS (2) in Orthopædic Surgery. Whole-time or on sessional basis by arrangement. Salary at rate of £34 14s. 6d. or £52 10s. per week, whole-time, according to previous appointments in the National Health Service. 1 post at Burton-on-Trent General Hospital and the other at the Walsall General (Sister Dora) Hospital. Both vacant 1st May for approximately 6 weeks.

Apply immediately, giving details of previous experience and naming 2 referees, to Secretary, 10, Augustus-road, Birmingham, 15.

BRISTOL. UNITED BRISTOL HOSPITALS. South WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by both Boards for the appointment of ASSISTANT RADIOTHERAPIST (Senior Hospital Medical Officer grade). The appointment will be whole-time, and it is estimated that approximately 5/6ths of the duties will be in the Radiotherapy Centre in the Teaching Hospital at Bristol and 1/6th in associated centres in the Region.

Applications, stating full christian names, age and particulars of education, qualifications and experience, and accompanied by 2 recent testimonials and the names of 2 referees, should be sent to the undersigned, from whom further particulars can be obtained, not later than Monday, 19th May, 1958.

STEPHEN C. MERIVALE,
Secretary to the Board of Governors.

Bristol Royal Infirmary, Bristol, 2.

EDINBURGH. THE DAVIDSON CLINIC. There is a vacancy in this voluntary outpatient clinic for a young PSYCHIATRIST to do Psychotherapy on a half-time basis, beginning October, 1958. Opportunities for private practice. Applicants are required to have had a personal analysis. Salary according to experience.

Applications, together with names and addresses of 2 referees, to be made to the Medical Director, 58, Dalkeith-road, Edinburgh, 9.

LIVERPOOL REGIONAL HOSPITAL BOARD. WALTON HOSPITAL. Applications are invited for the post of Part-time CONSULTANT E.N.T. SURGEON giving 2 notional half-days per week at the above Hospital. Applicants should possess a higher qualification in surgery and have wide experience in E.N.T. surgery.

Forms of application from Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be returned not later than 24th May, 1958.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for appointment as CONSULTANT PHYSICIAN of Junior status for duty initially at the Liverpool Stanley Hospital. The appointment is for 4 notional half-days a week. Candidates must possess a registrable qualification and F.R.C.P. or M.R.C.P. of London.

Detailed applications, giving full particulars of age, qualifications, &c., present and previous appointments, and the names of 3 referees, should reach the Secretary, 80, Rodney-street, Liverpool, 1, by 17th May, 1958.

MANCHESTER REGIONAL HOSPITAL BOARD. Whole-time, NON-RESIDENT ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer) to the Burnley and District Hospitals (Burnley General and Victoria Hospitals, Reedyford Hospital, Nelson, &c.) Successful candidate will work under general guidance of a Consultant and should live in or near Burnley. Higher qualification in anæsthetics essential.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by 19th May, 1958.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL, MANCHESTER, 13. SENIOR HOSPITAL MEDICAL OFFICER in Ophthalmology. Full-time, or maximum part-time, non-resident post. Previous experience in specialty essential.

Application form obtainable from F. J. CABLE, Secretary, United Manchester Hospitals, to be returned as soon as possible.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. CONSULTANT OPHTHALMIC SURGEON (8 sessions) for duties initially at Bangour General Hospital. It is proposed that at a later date the successful applicant should be associated with a clinical unit in the Royal Infirmary of Edinburgh.

Apply, giving particulars of age, qualifications and previous experience, and the names of 3 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 24th May, 1958.

SOUTH WESTERN REGIONAL HOSPITAL BOARD. Appointment of Medical Superintendent, St. Lawrence's Hospital, Bodmin. Applications are invited for the whole-time appointment of CONSULTANT PSYCHIATRIST to the West Cornwall Clinical Area. Applicants must possess a higher qualification. The successful candidate will have charge of beds at St. Lawrence's Hospital, Bodmin, and will act as Medical Superintendent of this Hospital; he will also be required to visit other hospitals in the clinical area as determined by the Regional Hospital Board. A considerable sum of money has been set aside for the development of the Hospital and the Member Health Services in the area, and the new Superintendent would be expected to take an active part in the re-planning of the Hospital. A house for a married man will be available if required.

Applications (12 copies), stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 24th May, 1958.

WELSH REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens CONSULTANT ORTHOPÆDIC AND TRAUMATIC SURGEON required Clwyd and Deeside Hospital Management Committee area immediately.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

LINGFIELD HOSPITAL SCHOOL FOR EPILEPTIC CHILDREN. Applications are invited for the post of DEPUTY MEDICAL SUPERINTENDENT to commence duties in the Autumn. Neurological or pædiatric experience desirable. Mainly medical but some administrative duties. Salary according to the scale for Senior Hospital Medical Officers. A house is available at a nominal rent for a married man. Superannuable under F.S.S.N.

Applications, stating age, marital status, full particulars of qualifications and experience and names of 2 referees, to be sent to the Medical Superintendent, Lingfield Hospital School, Lingfield, Surrey.

SOUTH AFRICA. PROVINCIAL ADMINISTRATION OF THE CAPE OF GOOD HOPE. UNIVERSITY OF CAPE TOWN. Joint medical staff for Red Cross War Memorial Children's Hospital, Rondebosch. Vacancy. Applications are invited from suitably qualified persons for appointment to the following vacant post at the Red Cross War Memorial Children's Hospital, Rondebosch, Cape Town:—

Department of Diagnostic Radiology

MEDICAL PRACTITIONER (grade F) with salary at the rate of £1980 p.a. (fixed).

In addition to the basic salary, a non-pensionable cost-of-living allowance at rates prescribed from time to time by the Administrator (at present amounting to £234 p.a.) is payable to certain whole-time married officials and employees.

The conditions of service are governed by the relevant Ordinances and Regulations as well as the agreement entered into between the Cape Provincial Administration and the University of Cape Town.

The Joint Medical Staff is required to serve jointly the Provincial Administration and the University of Cape Town.

Candidates must be registered Specialists or must be in possession of appropriate postgraduate diplomas or degrees in Diagnostic Radiology, and are requested to furnish particulars in regard to the following:—

(*a*) Academic achievements (degrees and diplomas held and the standard of achievement in professional examinations, scholarships and special awards).

(*b*) Professional experience (not only the name of the employer but also that of the institution in which the candidate worked and the type of work undertaken).

(*c*) Names of 3 referees (1 of these should preferably be someone occupied in the same branch of medicine as the candidate), who should be asked by the candidate to submit confidential reports to the Director of Hospital Services before the closing date for the receipt of applications.

Application must be made in duplicate on the prescribed form, Staff 23, which is obtainable from the office of the Immigration Attaché for the Union of South Africa, South Africa House, Trafalgar-square, London, W.C.2. Details as regards conditions of service and transport facilities can also be obtained at the office of the above mentioned.

The completed application forms must be addressed to the Acting Director of Hospital Services, P.O. Box 2060, Cape Town, South Africa, and must reach him not later than 14th June, 1958.

Candidates must state the earliest date on which they can assume duty.

Hospital Services: Junior Appointments

BATTERSEA GENERAL HOSPITAL, Battersea Park, S.W.11. CASUALTY OFFICER. Resident. Vacant 31st May, 1958. Senior House Officer grade.

Apply, enclosing copies of 2 recent testimonials, to Hospital Secretary, with whom arrangement can be made to view the Hospital.

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. HOUSE SURGEON, pre-registration post, vacancy 7th May, 1958.

Applications, stating experience, and copies of 2 testimonials, to Hospital Secretary immediately.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.11. HOUSE SURGEON, resident. Vacant 1st June, 1958. Open to registered practitioners and pre-registration candidates.

Apply Hospital Secretary, enclosing copies of 3 recent testimonials, by 14th May, 1958.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR required. Post recognised for F.F.A. R.C.S. Hospital may be visited by direct appointment. Post vacant 1st August.

Application forms from, and returnable to, Group Secretary, Central Middlesex Group Hospital Management Committee, Park Royal, N.W.10, by 13th May, 1958.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (123 Beds.) Applications are invited for the post of SECOND CASUALTY OFFICER with duties in the department of orthopædic and traumatic surgery (Senior House Officer grade). Recognised for F.R.C.S. Vacant 11th June, 1958. Salary £819 p.a. less £150 p.a. for board, lodging, &c.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (123 Beds.) HOUSE SURGEON required for 6 months. Post vacant 12th May, 1958. Recognised for F.R.C.S.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. 8 RESIDENT HOUSE PHYSICIANS (general medicine) required: 4, 1st July, 4, 1st August.

Detailed applications, copies of 2 recent testimonials, to Secretary, Board of Governors, The Hammersmith, West London and St. Mark's Hospitals, Ducane-road, London, W.12, by 14th May.

HAMMERSMITH HOSPITAL AND INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY, AND NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Joint appointment. Whole-time REGISTRAR in Obstetrics and Gynæcology required 1st July, 1958. Appointment tenable for minimum period of 2 years, of which the first year will be spent at the Luton Maternity Hospital and Luton and Dunstable Hospital, Luton (resident), and the second year at the Hammersmith Hospital and Institute of Obstetrics and Gynæcology (non-resident).

Application forms obtainable from and returnable to the Group Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, London, N.W.8. Required to commence at the end of June, 1958, Full-time SURGICAL REGISTRAR (Male). The possession of the Diploma of Fellow of one of the Royal Colleges is desirable. Honorarium at the rate of £850 p.a. Appointment will be for a period of 12 months.

Further particulars may be obtained from the Secretary, to whom applications with the names of 3 referees, should be sent on or before Tuesday, 27th May.

GUY'S HOSPITAL AND SOUTH EAST METROPOLI-TAN REGIONAL HOSPITAL BOARD. Applications are invited to fill the following established vacancies for SENIOR REGISTRARS to the Board of Governors of Guy's Hospital and the South East Metropolitan Regional Hospital Board. They will be expected to spend a minimum of 1 and not more than 2 years in a Regional Board Hospital, in the Group as stated, on an exchange basis during a 4-year tenure of the post. The appointments will be made jointly by the bodies concerned and will be held in the first instance at Guy's Hospital. The posts, which will be reviewed annually, are subject to the terms and conditions of service of hospital medical and dental staff (England and Wales) with duties commencing on 1st October, 1958.

General medicine. Bromley Group.
General surgery. South-East Kent Group.
General surgery. Bermondsey and Southwark Group.
Obstetrics and gynæcology. Bromley Group.
Psychological medicine. Bexley Group.
Orthopædic and traumatic surgery. Medway and Gravesend Group.
Clinical pathology. Lewisham Group.
Physical medicine. Orpington and Sevenoaks and Bromley Groups.

Forms of application are obtainable from, and should be lodged with, the Superintendent, Guy's Hospital, London Bridge, S.E.1, not later than 26th May, 1958.

LAMBETH HOSPITAL, Kennington, S.E.11. Applications are invited from pre-registration and registered medical practitioners for the position of RESIDENT HOUSE SURGEON vacant 5th June, 1958. Hospital recognised for F.R.C.S. Successful candidate will be required to carry out a fortnight's locum duty starting 22nd May, 1958.

Application forms from the Hospital Secretary.

LAMBETH HOSPITAL, Brook-drive, London, S.E.11. Locum ANÆSTHETIC REGISTRAR required 19th May–5th June, 23rd June–3rd July (dates inclusive).

Apply to Secretary (Telephone: RELiance 3804).

LEWISHAM HOSPITAL, London, S.E.13. Applications are invited for the post of SENIOR HOUSE OFFICER (orthopædics). Vacant immediately and recognised for 6 months' training for F.R.C.S. Salary £819 10s. p.a., less £150 for residential emoluments.

Applications, stating age, qualifications and experience, with copy testimonials or names of referees, to the Group Secretary, Lewisham Hospital, S.E.13.

LONDON CHEST HOSPITAL. Hospitals for Diseases of THE CHEST. A vacancy occurs 1st July, 1958, for REGISTRAR in Clinical Pathology (Registrar grade). The appointment (non-resident) is a whole-time one and will be for 1 year in the first instance.

Applications, stating date of birth, qualifications with dates, and previous experience, together with copies of 3 testimonials, should reach the undersigned not later than 6th May (quoting reference N.R.). J. ROBBINS, House Governor.

London Chest Hospital, E.2.

LONDON CHEST HOSPITAL (Country Branch). Hos-PITALS FOR DISEASES OF THE CHEST. REGISTRAR in Clinical Pathology (Registrar grade). A vacancy occurs at the Country Branch, near Letchworth. The appointment is a whole-time one and will be for 1 year in the first instance, and the holder may be resident or non-resident.

Applications, stating age, qualifications with dates, and previous experience, together with copies of 3 testimonials, should be forwarded at once to J. ROBBINS, House Governor, London Chest Hospital, E.2.

LONDON JEWISH HOSPITAL, Stepney Green, E.1. (130 Beds.) SENIOR HOUSE OFFICER (surgical Department) required (resident). Post recognised for F.R.C.S.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Hospital Secretary.

NELSON HOSPITAL, Kingston-road, Merton, S.W.20. RESIDENT ANÆSTHETIST (Senior House Officer grade) with certain duties as House Physician in the Children's Ward and Casualty Department. Post recognised for D.A. Vacant 21st May.

Applications, stating age, qualifications and experience, with copies of testimonials and the name of 1 referee, should be sent to the Group Secretary, St. Helier Hospital, Surrey.

NORTH MIDDLESEX HOSPITAL, London, N.18. Casu-ALTY OFFICER (Senior House Officer grade). 6 months' appointment, starting 19th May. Non-resident post; recognised for F.R.C.S. 3 Casualty Officers employed: duties include service with the 3 main surgical units.

Applications, stating age, qualifications, experience, together with copies of recent testimonials and/or names of 2 referees, to Hospital Secretary.

NATIONAL HEART HOSPITAL, Westmoreland-street, W.1 (with which is associated The Institute of Cardiology). Applications are invited for the post of ASSISTANT RESIDENT MEDICAL OFFICER (Male). The appointment is for a period of 6 months from 1st July, 1958, but may be renewed for a further period of 6 months. The status and salary are those of a Senior House Officer in accordance with the national terms and conditions of service.

Applications, with copies of 3 recent testimonials, should be sent to me not later than Friday, 16th May, 1958.

ROBERT G. E. WHITNEY, Secretary to the Board.

NORTH LONDON BLOOD TRANSFUSION CENTRE. Deansbrook-road, EDGWARE, MIDDLESEX. JUNIOR HOSPITAL MEDICAL OFFICER required for full-time duty with mobile teams at donor sessions. The appointment is for 3 years. Vacant 1st July.

Applications, stating age, qualifications, experience and names of 2 referees, to reach the Director by 10th May, 1958.

PADDINGTON GENERAL HOSPITAL, Harrow-road, W.9. (567 Beds.) Applications are invited for the post of REGISTRAR (obstetrics and gynæcology), whole-time, resident or non-resident. Resident post recognised for M.R.C.O.G. Department contains 93 obstetric and 38 gynæcological beds. Hospital visited by appointment.

Application forms obtainable from and returnable to the Secretary to Committee, Paddington Group Hospital Management Committee, Harrow-road, W.9, by 19th May, 1958.

PADDINGTON GENERAL HOSPITAL, Harrow-road, W.9. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) (resident on duty). Recognised for D.A. and F.F.A. R.C.S.

Applications, stating age, qualifications, medical school, experience, together with names of 2 referees, to Hospital Secretary immediately.

PLAISTOW HOSPITAL, Samson-street, London, E.13. Applications are invited for appointment of SENIOR HOUSE OFFICER (resident) to the Chest Unit and Infectious Diseases Unit at the above Hospital for 12 months commencing 16th July, 1958 (if possible appointment to be preceded by 4 weeks Locum). Previous experience in diseases of the chest is desirable. Excellent experience is afforded in the investigation of chest and infectious diseases cases and there are good facilities for postgraduate study for the M.R.C.P. examination.

Applications, with copies of recent testimonials, to M. J. HUNTLEY, Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 14th May, 1958.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. Applications are invited for the appointment of RESIDENT PÆDIATRIC HOUSE PHYSICIAN (third post) to the above Hospital for a period of 6 months, now vacant (post recognised for D.C.H.).

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned immediately.

REGIONAL NEUROSURGICAL CENTRE. (66 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER (neurosurgery). Vacant 1st June. Post recognised for F.R.C.S. and D.P.M. and provides excellent opportunity for training in Neurology.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ROYAL FREE HOSPITAL, W.C.1. Applications are invited from registered medical practitioners for the following posts:—

(*a*) 6 months HOUSE OFFICER, Infectious Diseases Department, followed by 6 months PÆDIATRIC HOUSE PHYSICIAN.

(*b*) 6 months PÆDIATRIC HOUSE PHYSICIAN, followed by 6 months HOUSE OFFICER, Infectious Diseases Department.

The posts are full-time and resident. Duties to commence on 1st July, 1958. Salary and conditions of service in accordance with those laid down by the Ministry of Health.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 15th May, 1958.

ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. Applications are invited for the post of RESIDENT SURGICAL REGISTRAR, appointment about 1st July, 1958. Gross salary: first year, £935 (residential emoluments of £130 deductible); second year, £1061 10s. (residential emoluments of £145 deductible).

Please state age, qualifications, past and present appointments, and include 2 recent testimonials and/or the names of 2 referees. Applications should reach the undersigned (from whom further information may be obtained) as soon as possible, and in any event not later than 19th May, 1958.

R. E. LAWSON, Secretary and House Governor.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, London, W.1, and Brockley Hill, STANMORE, MIDDLESEX. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (3 vacancies) for period of 6 months, 1 to commence duties at Great Portland-street on 19th July, 1958, and 2 to commence duties at the Country Hospital, Stanmore, on 12th July, 1958, and 28th July, 1958.

Applications, stating preference, to be received by 30th May, 1958. Forms of application can be obtained from the House Governor at 234, Great Portland-street, W.1.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. Appli-cations are invited for 2 posts of HOUSE PHYSICIAN (post- or pre-registration). Vacant 5th and 16th June, 1958.

Applications, with copies of recent testimonials, to be sent to the Hospital Secretary by 14th May, 1958.

ST. ANDREW'S HOSPITAL, Devons-road, Bow, E.3. HOUSE SURGEON (obstetrics and gynæcology). Recognised pre-registration post.

Applications, with copy of at least 1 testimonial, should be sent to Hospital Secretary immediately.

ST. BARTHOLOMEW'S HOSPITAL, E.C.1, and NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in Pathology to be held for 1 year at the North Middlesex Hospital and for 3 years at St. Bartholomew's Hospital. The post is tenable from a date to be arranged early this summer and is subject to annual re-election.

Applications (12 copies), together with the names of 3 referees, should be submitted to the undersigned within the next 14 days.

C. C. CARUS-WILSON, Clerk to the Governors.

ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications are invited for the post of SURGICAL CASUALTY REGISTRAR for a period of 1 year, with possible re-election up to 2 years. The post is recognised for the F.R.C.S. and is tenable from a date to be arranged in the early summer.

Applications, together with the names of 2 referees, should be submitted to the undersigned within the next 21 days.

C. C. CARUS-WILSON, Clerk to the Governors.

ST. BENEDICT'S HOSPITAL, Church-lane, Tooting, S.W.17. SENIOR HOUSE OFFICER (resident) required for active geriatric and rehabilitation unit. Adequate time to study for M.R.C.P. examination, together with clinical cases and teaching.

Applications, stating age, qualifications, experience and names of 2 referees, to Group Secretary, Wandsworth Hospital Group, St. James' Hospital, Balham, S.W.12, by 14th May.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (576 Beds.) Applications are invited to fill the post of SENIOR HOUSE OFFICER (tuberculosis).

Applications, stating age, qualifications, experience, &c., together with names of 2 referees, to Hospital Secretary immediately.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. Applications are invited for the post of Whole-time SENIOR HOUSE OFFICER (orthopædics and plastic surgery).

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, to Hospital Secretary immediately.

ST. JAMES' HOSPITAL, Balham, London, S.W.12. SENIOR HOUSE OFFICER (orthopædic and trauma). Post recognised for F.R.C.S. Vacant now.

Applications, stating age, qualifications, experience and names of 2 referees, to Group Secretary, Wandsworth Hospital Group, at above address, immediately.

ST. JAMES' HOSPITAL, Balham, London, S.W.12. South WEST METROPOLITAN REGIONAL HOSPITAL BOARD. MEDICAL REGISTRAR required. Post vacant 1st August.

Application forms, obtainable from Group Secretary, Wandsworth Hospital Group, at above address, to be completed and returned by 17th May.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Lisle-street, Leicester-square, London, W.C.2. Applications are invited for the following appointments, both vacant on 1st August, 1958 :—

(1) Whole-time REGISTRAR. The possession of a higher qualification is desirable.

(2) RESIDENT SENIOR HOUSE OFFICER for the In-patient Department.

Applications for both appointments, stating age, qualifications and experience, with names of 2 referees, should be sent to the Secretary to the Board by 24th May, 1958.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer) for 1 year.

Write, with 2 recent testimonials, to the Hospital Secretary by 9th May, 1958.

ST. MARY'S HOSPITAL, Paddington, W.2. Clinical PATHOLOGIST (Senior House Officer) for a period of 8 months (2 months non-resident, 6 months resident) from 1st June, 1958. Preference given to those intending to specialise in pathology.

Applications, giving full details, with names and addresses of 3 referees, should reach the House Governor not later than 19th May, 1958.

ST. MARY'S HOSPITAL, Paddington, W.2. Senior REGISTRAR to the Neurological Department at St. Mary's Hospital. Higher qualification essential. The appointment will be for a first period of 12 months, as from a date to be arranged.

Applications, giving full details, with names and addresses of 3 referees, should reach the House Governor not later than 12th May, 1958.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. House PHYSICIAN for duty in Rheumatism Unit. Resident. This post offers valuable experience in general medicine and specialised experience in rheumatic and connective tissue diseases and is very suitable for candidates wishing to take membership. Vacancy 6th June, 1958.

Applications, naming 2 referees, to Medical Superintendent within 14 days.

ST. THOMAS'S HOSPITAL, London, S.E.1. Senior REGISTRAR to the X-ray Diagnostic Department. Whole-time for a period of 1 year in the first instance.

Applications, naming 2 referees, to the Clerk of the Governors by 9th May, 1958.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from pre-registration and registered Female medical practitioners for the appointment of OBSTETRIC HOUSE SURGEON. Recognised for the M.R.C.O.G. Appointment for 6 months from 13th June, 1958.

Forms of application from the Secretary.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of RESIDENT SENIOR HOUSE OFFICER to Department of Clinical Pathology for 1 year from 1st July, 1958. Board and lodging £150 p.a.

Applications (4 copies), with names of 2 referees, to House Governor by 17th May.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1, and NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in Psychological Medicine, held jointly between the 2 above authorities, which will be vacant in September, 1958. The successful candidate will be required to attend The Hospital for Sick Children on 5 and the Woodberry Down Child Guidance Clinic on 4 sessions per week.

Further particulars and form of application, which must be returned by 19th May, 1958, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary, The Hospital for Sick Children.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy in June, 1958, for a Part-time SENIOR REGISTRAR to the Ophthalmic Department attending on Thursday afternoons.

Further particulars and form of application, which must be returned not later than 19th May, 1958, obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy in June, 1958, for a Part-time SENIOR REGISTRAR to the Department of Dermatology, attending on Thursday afternoons.

Further particulars and form of application, which must be returned not later than 19th May, 1958, obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications are invited for the post of Whole-time SENIOR REGISTRAR to the E.N.T. Department for 1 year in the first instance from 1st July, 1958. If one of the present Registrars is appointed to this post there will be a vacancy for a Registrar. Candidates should state whether they are applying for one or both appointments.

Applications, with the names of 2 referees, to T. F. W. MACKEOWN, Administrator and Secretary, by 14th May, 1958.

WANSTEAD HOSPITAL, Hermon Hill, E.11. (191 Beds.) Applications are invited for post of SENIOR HOUSE OFFICER (resident). Salary £819 10s. p.a. less £150 p.a. for board-residence. Post includes care of general surgical and orthopædic cases and duties in Casualty Department. Recognised for F.R.C.S.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WEST HAM GROUP HOSPITAL MANAGEMENT COMMITTEE, Stratford, E.15. ANÆSTHETISTS (resident). Senior House Officer grade. For 12 months commencing 11th August, 1958. 6 months Queen Mary's Hospital for the East End and 6 months East Ham Memorial Hospital; combined post recognised for D.A. and F.F.A. R.C.S.

Applications, with names of 3 referees, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 16th May, 1958.

WHITTINGTON HOSPITAL, London, N.19. Registrar required for E.N.T. Department (30 Beds). Post recognised for F.R.C.S. and D.L.O. Vacant 12th June, 1958. Considerable experience in laryngology desirable as the post is a responsible one. Department takes part in postgraduate teaching. Hospital may be visited by direct appointment. Post is non-resident, but successful candidate will be required to sleep in the Hospital on alternate nights and alternate week-ends.

Application forms obtainable from and returnable to the Group Secretary, 46, Cholmeley-park, Highgate, London, N.6, by 13th May, 1958.

WHITTINGTON HOSPITAL, London, N.19. Applications are invited for the post of SENIOR HOUSE OFFICER (resident) for E.N.T. Department. Post recognised for D.L.O. Vacant 5th June, 1958.

Application forms obtainable from Group Secretary, 46, Cholmeley-park, London, N.6 (ARChway 3070, extension 527), and returnable to the Medical Superintendent, Whittington Hospital, London, N.19, by 13th May, 1958.

WIMBLEDON HOSPITAL. Thurstan-road, Copse Hill, S.W.20. (82 Beds.) RESIDENT HOUSE SURGEON (not pre-registration). Post vacant 1st June. Salary £577 10s. Post affords good opportunity for postgraduate training and offers excellent experience in surgery.

Applications, giving age, qualifications, &c., and names and addresses of 2 referees, to the Secretary at above address.

ABBOTS LANGLEY, WATFORD, HERTFORDSHIRE. LEAVESDEN HOSPITAL. (2250 Beds—recognised for D.P.M.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Psychiatry (mental deficiency) at above Hospital. Resident accommodation available for single person, or large flat available for married person. Hospital may be visited by direct appointment with Physician-Superintendent.

Application forms obtainable from, and returnable to, Group Secretary, Leavesden Hospital, Abbots Langley, Watford, Hertfordshire, by 21st May, 1958.

ABERYSTWYTH, CARDIGANSHIRE. GENERAL HOS-PITAL. MID-WALES HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (surgical) required (resident). Post recognised for F.R.C.S. examination. Vacancy immediate.

Applications, stating age, experience, &c., to the Group Secretary, Mid-Wales Hospital Management Committee, 31, North-parade, Aberystwyth, Cardiganshire.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE SURGEON for general surgical duties. Post vacant 27th May, 1958. 6 months' appointment, suitable for pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE SURGEONS (2) for Traumatic and Orthopædic Unit. Posts vacant now. 6-month appointments, suitable for pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER for general surgical and medical duties. 6 months' appointment, not suitable for pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital, immediately.

ABERGAVENNY. PEN-Y-VAL HOSPITAL. Vale of Usk HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER. Salary according to national scale. Residential accommodation available for single person. Experience in psychiatry not essential.

Applications, stating age, nationality, qualifications and present appointment, together with the names of 2 referees, to be forwarded immediately to the Medical Superintendent, Pen-y-val Hospital, Abergavenny, Mon.

BARNSTAPLE. NORTH DEVON INFIRMARY. (105 Beds.) SENIOR HOUSE OFFICER required, whose duties will be mainly casualty. The post is tenable for 1 year, and will be vacant in early June. Small furnished flat available.

Applications to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (299 Beds.) HOUSE SURGEON (House Officer or Senior House Officer grade, according to experience). Vacant 1st June, 1958. General surgical duties, some orthopædics. Offers good opportunity for general experience in busy acute general hospital. Recognised for F.R.C.S. Approved pre-registration post but fully registered practitioners may apply.

Applications to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

BIRMINGHAM ACCIDENT HOSPITAL AND REHABILI-TATION CENTRE, Bath-row, BIRMINGHAM, 15. SENIOR HOUSE SURGEON, vacant July. Hospital is the largest traumatic unit in the country treating 50,000 new patients a year including 2000 burns. Ample opportunity for practical experience in all types of surgery. Recognised for casualty training by R.C.S.

Applications, with names of 2 referees, to Administrator.

BIRMINGHAM ACCIDENT HOSPITAL, Bath-row, Birm-INGHAM, 15. (215 Beds and 8 House Surgeons.) HOUSE SURGEON (resident). Hospital largest traumatic unit in the country and treats over 50,000 new patients each year. Recognised for purpose of casualty by R.C.S. (Eng.). Teaching programme by Consultant staff. 6-month appointment, some of which may be spent in 42-bedded Medical Research Council's Burns Unit.

Apply, naming 2 referees, to Administrator.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, BIRMINGHAM, 3. HOUSE OFFICER (resident) required. Recognised for D.O. and F.R.C.S. in Ophthalmology. Wide experience available in all branches including surgery.

Detailed applications to the Group Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) **Dudley, Stourbridge Group, The Guest Hospital, Dudley**

REGISTRAR (general medicine and geriatrics), Burton Road Hospital, Dudley (1040 Beds). Experience in specialty desirable. Higher qualifications desirable. Resident. Married accommodation can be arranged.

(2) **Wverhampton Group, The Royal Hospital, Wolverhampton**

REGISTRAR (general medicine), New Cross Hospital, Wolverhampton (634 Beds). Resident post. Married quarters available.

(3) **Stoke-on-Trent Group, Princes-road, Stoke-on-Trent**

REGISTRAR (orthopædics), North Staffordshire Royal Infirmary (875 Beds). Resident or non-resident. Vacant 1st June. Some duties at Hartshill Orthopædic Hospital (77 Beds). Experience specialty essential. Higher qualification an advantage.

Application forms from Group Secretaries, to be returned by 12th May, 1958.

BIRMINGHAM (SANATORIA) GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER at West Heath Hospital, Rednal-road, Birmingham, 31. (207 Beds for the treatment of tuberculous and non-tuberculous chest cases.) The successful applicant will reside at the above Hospital (accommodation for single person only), and will be offered facilities for undertaking duties at the Birmingham Chest Clinic, Great Charles-street, Birmingham, 3.

Applications, stating age, qualifications, training and experience, together with copies of 3 recent testimonials, should be addressed to the Group Secretary, Birmingham (Sanatoria) Group Hospital Management Committee, Yardley Green Hospital, Birmingham, 9.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. Applications are invited for the post of MEDICAL REGISTRAR (resident or non-resident) for duties at the General Hospital. M.R.C.P. essential. This post offers exceptional opportunities for clinical experience and research. In the case of married applicants, housing accommodation outside the Hospital may be available. The successful candidate will be expected to take his turn in reception duty which is arranged on a rota system.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him as soon as possible.

BIRMINGHAM. UNITED BIRMINGHAM HOSPITALS. THE BIRMINGHAM MATERNITY HOSPITAL. Applications are invited from registered medical practitioners for the post of RESIDENT OBSTETRIC HOUSE SURGEON, vacant immediately. The appointment is recognised for the M.R.C.O.G. and D.Obst.R.C.O.G.

Application forms obtainable from the House Governor, the Birmingham and Midland Hospitals for Women, Showell Green-lane, Sparkhill, Birmingham, 11, to be returned immediately. G. A. PHALP, Secretary.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (775 Beds.) Casualty Department, 40,000 attendances per year. SENIOR HOUSE OFFICER, vacant 27th May, 1958, resident or non-resident. Recognised for F.R.C.S. Tenable for 6 or 12 months.

Detailed applications to the Group Secretary.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. SENIOR HOUSE OFFICER or JUNIOR HOSPITAL MEDICAL OFFICER ANÆSTHETIST required at the above Hospital. Grading according to qualifications and/or experience.

Applications, including names of 3 referees, to Group Secretary, South West Durham Hospital Management Committee, by 12th May.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. (350 Beds.) HOUSE SURGEON required. Recognised pre-registration appointment. Accommodation available for married officer with no children.

Apply, naming 2 referees, to Group Secretary, South West Durham Hospital Management Committee, at above address.

BISHOP'S STORTFORD, HERTFORDSHIRE. HERTS AND ESSEX GENERAL HOSPITAL. Applications invited for post of HOUSE OFFICER (surgical) (pre-registration). Salary £467 10s.–£522 10s. p.a. less £125 for residential emoluments. Appointment to commence immediately.

Applications, stating age, nationality, qualifications and experience with copies of 2 recent testimonials or names of referees, to Hospital Secretary.

BLACKBURN AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE.

Royal Infirmary, Blackburn (262 general beds)

JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER (casualty and orthopædics) required 26th May, 1958. Junior Hospital Medical Officer post can be for any period up to 4 years. Recognised for F.R.C.S.

Queen's Park Hospital, Blackburn

HOUSE PHYSICIAN required immediately. Post recognised for pre-registration purposes.

Applications to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

Bolton District General Hospital (607 Beds)

RESIDENT SENIOR HOUSE OFFICER for general surgical duties. Tenable for 12 months and recognised for F.R.C.S.

RESIDENT HOUSE SURGEON. Now vacant, tenable for 6 months and recognised under pre-registration service scheme. Also recognised for F.R.C.S.

RESIDENT HOUSE PHYSICIAN for Department of Paediatrics. Not available to pre-registration service candidates. Tenable for 6 months. Hospital recognised for D.C.H.

The Royal Infirmary, Bolton (238 Beds)

SENIOR HOUSE OFFICER (resident or non-resident) for Casualty Department with some orthopædic duties. Now vacant, tenable for 12 months. Recognised for F.R.C.S. Staff of 2 with Consultant supervision and adequate relief. Post offers good casualty/accident experience.

Applications, stating age, nationality, qualifications, experience and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BOURNEMOUTH (near). CHRISTCHURCH HOS-PITAL, CHRISTCHURCH, HAMPSHIRE. (334 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (pre-registration interne) required for post becoming vacant on 26th June, 1958.

Applications to the Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE SURGEON. The appointment which becomes vacant on 31st May, 1958, is recognised for the F.R.C.S. examination and for pre-registration purposes.

Applications to the Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the immediate appointment of SENIOR HOUSE OFFICER (resident or non-resident—orthopædics and casualty combined). The post is recognised for the F.R.C.S. examination and is normally tenable for 12 months. The Unit consists of a Registrar and 2 Senior House Officers with additional medical assistance during summer months.

Applications to the Hospital Secretary.

BRADFORD ROYAL INFIRMARY, Bradford, Yorkshire. (507 Beds.) SENIOR HOUSE OFFICER (general surgery/urology) required. Post recognised for F.R.C.S.

Applications, stating age, qualifications, experience, and nationality, to the Secretary.

BRADFORD, 1. THE ROYAL EYE AND EAR HOSPITAL. SENIOR HOUSE SURGEON (ophthalmology) required. Post recognised for D.O.M.S. and F.R.C.S.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to the Secretary, Bradford Royal Infirmary.

BURTON-ON-TRENT. GENERAL HOSPITAL. Junior HOSPITAL MEDICAL OFFICER (anæsthetist) required. Recognised for D.A.

Applications to Group Secretary.

BURTON-ON-TRENT GENERAL HOSPITAL. Locum JUNIOR HOSPITAL MEDICAL OFFICER (Casualty Officer) required. Resident or non-resident.
Apply Group Secretary.

BURTON-ON-TRENT. THE GENERAL HOSPITAL. HOUSE OFFICER (orthopædics) (pre-registration post) required at the above Hospital. Recognised for F.R.C.S.
Applications to Group Secretary as soon as possible.

BURTON-ON-TRENT. THE GENERAL HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER (orthopædics), resident or non-resident, required at the above Hospital. Furnished or unfurnished flat available for married applicant.
Applications to Group Secretary as soon as possible.

BRISTOL. MANOR PARK HOSPITAL. (650 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER. Salary £852 10s.–£55–£1182 10s. Furnished accommodation available, together with board and laundry, for which a charge of £170 p.a. is made. The Hospital caters largely for chronic illness in the older age-group with some acute medical work. Consultant staff visit regularly, and there is ample time for postgraduate study.
Applications, stating age, nationality, whether married or single, experience, qualifications, and names and addresses of 2 referees, to be sent to the Group Secretary, Manor Park Hospital, Manor-road, Fishponds, Bristol, within 7 days of the appearance of this advertisement.

BROMLEY HOSPITAL, Kent. Senior House Officer in charge Casualty Department required 18th May. Recognised for F.R.C.S.
Apply, stating age, qualifications with dates, previous experience, and naming 3 referees, to Administrative Officer.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER (pathology). Post vacant mid-May.
Apply, stating age, qualifications, experience, nationality, and names of 2 referees, to H. WILKINSON, Group Secretary, Bury General Hospital, Bury, Lancs.

CAMBRIDGE. THE UNITED CAMBRIDGE HOSPITALS. SENIOR HOUSE OFFICER in Radiotherapy (resident), for 1 year, vacant now.
Apply immediately, stating age, nationality, qualifications and experience with dates, and with copies of 3 testimonials, to the Secretary, Addenbrooke's Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (277 Beds.) The post of GENERAL SURGICAL AND UROLOGICAL HOUSE SURGEON (pre-registration or third post), which is recognised for the F.R.C.S., is now vacant. National Health Service salary and conditions.
Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (277 Beds.) The post of SENIOR HOUSE PHYSICIAN is now vacant at Stodmarsh Road Annexe. Duties include care of 30-Bedded unit of chest diseases, also work at the Chest Clinic and with the Pneumoconiosis Unit. National Health Service salary and conditions.
Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the appointment of SENIOR HOUSE OFFICER in Anæsthetics to commence as soon as possible. Appointment based at the Cardiff Royal Infirmary, but will include duties at other hospitals in the area.
Application forms are available from the Secretary to the Board at the Cardiff Royal Infirmary, Newport-road, Cardiff, and should be returned within 14 days of the appearance of this advertisement.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the appointment of SENIOR REGISTRAR in Child Health. Non-resident appointment, to commence 1st July, 1958.
Application forms are available from the Secretary to the Board at the Cardiff Royal Infirmary, Newport-road, Cardiff, and should be returned within 14 days of the appearance of this advertisement.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. (A general children's hospital of 550 Beds.) RESIDENT MEDICAL REGISTRAR required to a firm comprising 180 Beds, including acute medical (600 Beds), poliomyelitis, rheumatism, and long-stay wards.
Applications, on forms obtainable from the Group Secretary, should be returned immediately.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. (A general children's hospital of 550 Beds.) SURGICAL AND ORTHOPÆDIC REGISTRAR required for duties which include shared Registrar responsibility for 120 orthopædic beds and 60 acute and general beds. Applicants are invited to visit the Hospital by appointment with the Physician-Superintendent.
Applications, which should be made on forms obtainable from the Group Secretary, should be returned immediately.

CHELTENHAM GENERAL HOSPITAL. (220 Beds.) HOUSE SURGEON required (pre- or post-registration). The post offers a wide experience in general surgery, gynæcology, and orthopædic surgery. Post recognised for the F.R.C.S.
Apply, with names of 2 referees, to the Secretary, General Hospital, Cheltenham.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (430 Beds.) ORTHOPÆDIC HOUSE SURGEON (Senior House Officer or House Officer (intern) grade). 100 orthopædic beds. Post recognised for F.R.C.S. and pre-registration service. Salary in accordance with terms and conditions of National Health Service. Post vacant 28th May, 1958.
Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peters' Hospital, Chertsey, Surrey.

CHEADLE ROYAL—Registered mental hospital. Applications are invited for the appointment of a SENIOR REGISTRAR. Candidates must hold a D.P.M. Excellent facilities for research. Accommodation available if required. Salary as per National Health Service scale. The Hospital operates outside the National Health Service, but reciprocity has been granted between the National Health Service superannuation scheme so that years of service are transferable in either direction.
Applications, giving full details and names of 3 referees, should be sent to the Medical Superintendent, Cheadle Royal Hospital, Cheadle, Cheshire.

CHEADLE ROYAL—Registered mental hospital. Applications are invited for the appointment of a REGISTRAR. Opportunities will be afforded for attendance at courses for the D.P.M. examination at Manchester University. Salary as per National Health Service scale. The Hospital operates outside the National Health Service, but reciprocity has been granted between the National Health Service superannuation scheme so that years of service are transferable in either direction.
Applications, giving full details and names of 3 referees, should be sent to the Medical Superintendent, Cheadle Royal Hospital, Cheadle, Cheshire.

CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. RESIDENT REGISTRAR in Anæsthetics. Appointment, for 1 year (renewable), vacant 1st June, 1958. Duties chiefly at the Royal West Sussex and St. Richard's Hospitals. Recognised for F.F.A. R.C.S. Salary (Whitley terms and conditions) £935 first, £1061 10s. second year, less £170 p.a. for residence. National Health Service superannuation scheme. Hospitals may be visited.
Application forms, from Group Secretary, 174, Broyle-road, Chichester, Sussex, to be returned within 14 days.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for:—

Black Notley Hospital, Braintree, Essex (522 Beds)

Post of HOUSE OFFICER (orthopædic surgery). Duties include care of cases from London Hospital Orthopædic Department. Pre-registration or third post, tenable for 6 months. Recognised for F.R.C.S.
Post of Locum Tenens SENIOR HOUSE OFFICER. Required for period 12th May–6th July, 1958, for Pulmonary Tuberculosis Unit. Also chest clinic work and non-tuberculous diseases of the lungs.

Clacton and District Hospital; Clacton-on-Sea, Essex (58 Beds)

Post of SENIOR HOUSE OFFICER. Duties include medical, surgical and casualty work. Post tenable for 1 year.
Post of REGISTRAR (temporary) as Resident Casualty Officer during summer for period not exceeding 6 months.

Essex County Hospital, Colchester, Essex (181 Beds)

Post of HOUSE OFFICER to E.N.T. and Pædiatric Departments. Post tenable for 6 months. Post-registration appointment. Recognised for D.L.O. The Pædiatric Department consists of a new unit of 24 Beds.
Post of Locum SENIOR HOUSE OFFICER (anæsthetics) required from 20th May for approximately 2 months.

Harwich and District Hospital, Dovercourt, Essex (30 Beds)

Post of SENIOR HOUSE OFFICER. Duties include medical, surgical, and casualty work.

St. Mary's Hospital, Pope's Lane, Colchester

Post of RESIDENT MEDICAL OFFICER (Senior House Officer grade) at St. Mary's Hospital Geriatric Unit; also duties in connection with medical and surgical patients accommodated there, and duties at Essex County Hospital (general medical).
Post tenable for 6 or 12 months, resident.
Applications, with copies of 3 testimonials, to Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COLCHESTER, ESSEX. SEVERALLS HOSPITAL. SENIOR HOUSE OFFICER required at the above Mental Hospital. There are excellent opportunities for up-to-date experience and postgraduate work in all branches of psychiatry, including treatment of neurosis. Opportunities will be given at the Hospital for clinical instruction for the D.P.M.
Applications, with particulars and copies of testimonials, or names of referees, to the Medical Superintendent as soon as possible.

COULSDON, SURREY. NETHERNE HOSPITAL. Applications are invited for the posts of JUNIOR HOSPITAL MEDICAL OFFICER and SENIOR HOUSE OFFICER. All modern forms of treatment carried out in this Hospital of 2000 Beds, which is recognised for the D.P.M. The Physician-Superintendent will give further information or arrange a visit to the Hospital.
Please apply for application forms from the Secretary immediately. Canvassing, either directly or indirectly, will disqualify.

CUCKFIELD HOSPITAL, Cuckfield, near Haywards HEATH. MID-SUSSEX HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOUSE SURGEON (Orthopædic and Traumatic Unit). Post vacant end of May. Not pre-registration.
Applications, giving age, nationality, qualifications and experience, with names of 2 referees, to Hospital Secretary.

DEVONPORT. SOUTH DEVON AND EAST CORNWALL HOSPITAL.
SENIOR HOUSE OFFICER in Surgery, vacant 1st June, 1958.
HOUSE SURGEON, pre-registration post, vacant 1st June, 1958.
Both recognised for the F.R.C.S.
Apply, with names of 3 referees, to the Group Secretary, 7, Nelson-gardens, Devonport.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (416 Beds.) SENIOR HOUSE OFFICER (general surgery), resident. Appointment from 1st June for 6 months. Recognised for F.R.C.S.
Applications, stating full details and 2 names for reference, to Secretary.

DAGENHAM HOSPITAL, Rainham-road South, Dagenham, ESSEX. (Near Dagenham East Underground Station.) There will be a vacancy for a JUNIOR HOSPITAL MEDICAL OFFICER (resident) on 4th June, 1958, at the above Hospital (150 Beds) for pulmonary tuberculosis—all stages. Salary in accordance with the national scale (£852 10s.–£55–£1182 p.a.) less residential charges. Suitable for candidate studying for higher degree. Further particulars from the Physician-Superintendent.

Applications, stating age, qualifications, and previous experience, together with recent testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement. H. F. HARRIS, Group Secretary,

Ilford and Barking Group Hospital Management Committee, King George Hospital, Ilford.

DONCASTER ROYAL INFIRMARY. (330 Beds.) Applications are invited for the post of HOUSE SURGEON (Intern or Senior House Officer). Post recognised for F.R.C.S.

Applications, with particulars of experience and copies of 2 recent testimonials, to the Group Secretary, Doncaster Hospital Management Committee, at Doncaster Royal Infirmary.

DORCHESTER, DORSET. HERRISON HOSPITAL. HERRISON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER at above Hospital. The post offers opportunities of gaining experience in all branches of psychiatry. Salary £852 10s. p.a. Post subject to Whitley Council conditions of service and superannuable in accordance with the National Health Service (superannuation) regulations. Full board-residence available for a single Officer.

Applications in writing, giving details of age, qualifications, and experience, to the Medical Superintendent as soon as possible.

DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL HOSPITAL. (247 Beds.) JUNIOR HOUSE PHYSICIAN, vacant now. Approved pre-registration post, but fully registered practitioners may apply. Duties to include geriatrics and acute medicine. Good general experience for first house appointment.

Apply Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DUNDEE ROYAL INFIRMARY. Resident House Officer (provisionally or fully registered) E.N.T. Department, till 31st July.

Apply Medical Superintendent.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR in Mental Deficiency and Child Psychiatry, Little Plumstead (near Norwich) Mental Deficiency Group of hospitals and Child Psychiatry Service. The group (1150 Beds), which is progressive, is the centre for much out-patient work, including child psychiatry clinics. Married or single accommodation available.

Applications, stating age, experience and the names of 3 referees, to Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 19th May, 1958. Candidates invited to visit the Hospitals by direct arrangement with the Medical Superintendent.

EAST GRINSTEAD. QUEEN VICTORIA HOSPITAL. RESIDENT HOUSE OFFICER (Male or Female), permanent or locum appointment, required immediately for General Hospital. Appointment for 6 months in first instance; recognised for pre-registration purposes, and for F.R.C.S. examination.

Apply, stating age and experience, with names of 3 referees, to Hospital Secretary.

EAST GRINSTEAD. THE QUEEN VICTORIA HOSPITAL. (Plastic Surgery and Jaw Injuries Centre.) TUNBRIDGE WELLS GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for resident appointment of SENIOR HOUSE OFFICER in Anæsthetics, vacant 19th May, 1958. Duties in anæsthesia for both general and plastic surgery. Post recognised for examinations of D.A. and F.F.A. R.C.S.

Apply, stating qualifications, experience, age and names of 3 referees, to Group Secretary, Sherwood Park, Pembury-road, Tunbridge Wells, as soon as possible.

EAST LOTHIAN HOSPITALS GROUP BOARD OF MANAGEMENT. EAST FORTUNE HOSPITAL, DREM, NORTH BERWICK. SENIOR HOUSE OFFICER, resident, required from 1st June, 1958. Married quarters available if required. The Hospital has 300 Beds in actior, covering tuberculosis and chest conditions, and the work includes a limited amount of thoracic surgery.

Applications, stating age, qualifications, and experience, together with the names of 2 referees, to the Secretary, East Lothian Hospitals Group Board of Management, 31, Court-street, Haddington, by 10th May, 1958.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (647 Beds.) 2 RESIDENT HOUSE PHYSICIANS for above Hospital. Posts vacant 1st and 14th June, 1958. 6 months' appointments. Recognised for pre-registration purposes.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Administrator of Hospital by 16th May, 1958.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (647 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR, whole-time, required at above Hospital. Higher surgical qualification desirable. Hospital may be visited by direct appointment with the Medical Administrator.

Appointment forms obtainable from and returnable to Group Secretary, Hendon Group Hospital Management Committee, Edgware General Hospital, by 13th May, 1958.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT HOUSE SURGEON, pre-registration post. Vacant 11th May, 1958. Duties with General Surgical Unit, doing some genito-urinary work. Post recognised by the Royal College of Surgeons. 6-month appointment.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT ORTHOPÆDIC HOUSE SURGEON (third post). Vacant immediately. Post provides opportunity for general surgery. 6 months' appointment. Post recognised for F.R.C.S.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital.

ENFIELD. WAR MEMORIAL HOSPITAL, Chase Side, ENFIELD, MIDDLESEX. RESIDENT SENIOR HOUSE OFFICER required immediately for general medical and surgical duties in acute general hospital of 61 Beds. 12 months' appointment.

Applications, with names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, Chase Farm Hospital, The Ridgeway, Enfield, Middlesex.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. Applications are invited from pre-registration and registered medical practitioners for the posts of HOUSE SURGEON (general surgery) (2). Vacant on 16th and 18th May, 1958, respectively.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary immediately.

GLASGOW NORTH EASTERN MENTAL HOSPITALS BOARD OF MANAGEMENT require RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER for Woodilee Mental Hospital, Lenzie (1292 Beds). Outpatient clinic. Facilities for taking D.P.M. Salary £852 10s.–£55–£1182 10s. p.a.

Applications, stating age, training and experience and qualifications, and names of 2 referees, to be sent to the Medical Superintendent, Woodilee Mental Hospital, Lenzie.

GLASGOW. ROYAL HOSPITAL FOR SICK CHILDREN, YORKHILL, GLASGOW. Applications are invited for the post of SENIOR HOUSE OFFICER (resident) in Surgical Pædiatrics at the above Hospital. National Health Service salary and conditions of service.

Applications, with names of 3 referees, to be lodged with the Secretary, Board of Management for Glasgow and District Children's Hospitals, 86, St. Vincent-street, Glasgow, C.2.

GRAVESEND AND NORTH KENT HOSPITAL, Gravesend, KENT. MEDWAY AND GRAVESEND HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON. Applications are invited for this resident post (1 of 5 at the Hospital) which is approved for pre-registration purposes and recognised for the F.R.C.S. The successful applicant will be attached to 2 Consultant Surgeons with opportunities for extensive surgery and vascular work. Salary £467 10s.–£577 10s. p.a. according to experience.

Applications to Hospital Secretary, stating age, experience, qualifications, and nationality.

GREENOCK. RAVENSCRAIG HOSPITAL (MENTAL AND GENERAL). Applications are invited for the post of RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female). The post offers experience in all branches of psychiatry, including modern forms of treatment and outpatient clinics. Experience is available also in the medical and geriatric wards. The Hospital is recognised for the D.P.M. and facilities will be granted to attend courses in Glasgow.

Applications, with full details, and the names of 2 referees, to be forwarded to the Physician-Superintendent.

GRIMSBY. SCARTHO ROAD HOSPITAL. Grimsby HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE OFFICER (surgical) required (pre-registration or Senior House Officer grade) for duties in acute surgical unit of 56 Beds, modern theatre and Outpatient Department. Offers excellent experience of all types of general surgery. Married quarters available. Post vacant May, 1958.

Applications, with names of 2 referees, to Hospital Secretary.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (233 Beds.) CASUALTY OFFICER (Senior House Officer) required 6th May or 9th June. Post recognised for F.R.C.S. examination. 2 Casualty Officers are employed, sharing the work of department and the orthopædic and traumatic unit, including fracture clinics. Regular instruction is given in traumatic surgery.

Applications, with copies of testimonials, to the Hospital Secretary.

HAREFIELD HOSPITAL REGIONAL THORACIC SURGICAL UNIT, HAREFIELD, MIDDLESEX. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SURGICAL REGISTRAR to the Harefield Thoracic Surgical Unit, which serves the North West Metropolitan Region. In the Hospital there are 90 Beds for non-tuberculous surgical chest conditions and 360 Beds for tuberculosis. The appointment thus affords a wide experience in all aspects of thoracic surgery. Candidates must have had previous surgical experience and preference will be given to candidates with a higher surgical qualification. The appointment will be held in the first instance for 1 year.

Application forms obtainable from, and returnable, to the Group Secretary, Harefield and Northwood Group Hospital Management Committee, Mount Vernon Hospital, Northwood, Middlesex, by 13th May, 1958.

HAREFIELD AND NORTHWOOD GROUP HOSPITAL MANAGEMENT COMMITTEE. ORTHOPÆDIC REGISTRAR required for this group of hospitals. Work involves sessions at Harefield, Mount Vernon and Northwood, Pinner and District Hospitals, together with 3 sessions at St. Vincent's Orthopædic Hospital.

Application forms obtainable from, and returnable to, the Group Secretary, Harefield and Northwood Group Hospital Management Committee, Mount Vernon Hospital, Northwood, Middlesex, by 13th May, 1958.

HASTINGS. ST. HELEN'S HOSPITAL. (493 Beds.) HOUSE SURGEON required. Pre-registration post, recognised for F.R.C.S. Modern theatre. Staff of 5.

Applications to Hospital Administrator.

HASTINGS. ST. HELEN'S HOSPITAL. (493 Beds.) HOUSE PHYSICIAN required. Pre-registration post vacant 2nd June. Staff of 5.

Applications to Hospital Administrator by 14th May, 1958.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE SURGEON. Pre-registration post for general surgery and urology required at this acute hospital (surgical) on 1st June, 1958.

Applications, with names of 2 referees, to Administrator.

HARTLEPOOLS HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) (recognised for F.F.A. R.C.S. and D.A.) for this Group of hospitals. Departmental staff : 3 Consultants, 1 Resident Registrar, 1 Senior House Officer. Married accommodation available.

Applications, stating age, nationality and qualifications, and accompanied by copies of 2 testimonials, should reach the Group Secretary at the General Hospital, West Hartlepool, as soon as possible.

HARTLEPOOLS HOSPITAL. (135 Beds.) Hartlepools HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE OFFICER (pre-registration) or SENIOR HOUSE OFFICER (Casualty and Orthopædics Department) (recognised for F.R.C.S.), vacant now. There is also a Senior Casualty Officer in the Group. Married accommodation available.

Applications, stating age, nationality and qualifications with dates, and enclosing copies of 2 testimonials, should be sent to the Group Secretary at the General Hospital, West Hartlepool, as soon as possible.

HENLEY-ON-THAMES, OXFORDSHIRE. PEPPARD CHEST HOSPITAL. (236 Beds.) READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of JUNIOR HOSPITAL MEDICAL OFFICER, vacant 28th April, 1958. The Hospital deals with all types of chest disease in medical and surgical wards. Previous experience in resident hospital appointments is desirable. Single accommodation is available.

Applications, stating age, qualifications and experience, with the names of 2 referees, should be forwarded to the Group Secretary, Reading and District Hospital Management Committee, 3, Craven-road, Reading.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general, first or second post) to commence 1st June, 1958. Pre-registration post; recognised under F.R.C.S. regulations.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HILLINGDON HOSPITAL, Uxbridge, Middlesex. (621 Beds.) PÆDIATRIC REGISTRAR. Previous pædiatric experience essential. Duties include experience in children's medical ward, neonatal unit, and pædiatric outpatient clinics. Unit recognised for D.C.H. Post vacant beginning July. Candidates may visit Hospital by direct appointment.

Application forms obtainable from and returnable to Group Secretary, Uxbridge Group Hospital Management Committee, The Furze, Pield Heath-road, Hillingdon, Middlesex, by 16th May.

HITCHIN, HERTFORDSHIRE. NORTH HERTS HOSPITAL. Applications are invited for the post of RESIDENT HOUSE SURGEON, vacant 15th May, 1958. Recognised for the F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator, Lister Hospital, Hitchin.

HUDDERSFIELD. ST. LUKE'S HOSPITAL. (235 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Senior House Officer grade) at the above Hospital, to commence duties immediately. The duties will be mainly surgical, in a hospital which caters for chronic sick, children, maternity, and acute medical and surgical patients. Salary in accordance with the terms and conditions of service for hospital medical and dental staff, £819 10s. p.a.

Applications, together with copies of 3 recent testimonials, to be sent to the undersigned as soon as possible.

H. J. JOHNSON,
Secretary to the Management Committee.

The Royal Infirmary, Huddersfield.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. (115 Beds.) HOUSE SURGEON required on 22nd May, 1958. Pre-registration or registration post. Recognised for D.C.H. An interesting and varied post which includes outpatient and casualty work.

Applications, together with details of experience, testimonials, &c., to the Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL (Anglesey-ROAD WING). (350 Beds.) Locum Tenens HOUSE SURGEON (general surgery) required from 9th May, 1958, for 2 weeks.

Applications to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL (Heath-ROAD WING), IPSWICH. Pre-registration post of HOUSE SURGEON to General Surgeon now vacant. Recognised for R.C.S. examination.

Detailed applications, with copies of recent testimonials, to Hospital Secretary.

KETTERING AND DISTRICT GENERAL HOSPITAL, NORTHAMPTONSHIRE. Applications are invited for the post of Locum HOUSE SURGEON (pre-registration), for the month of May. Post recognised for F.R.C.S.

Applications, stating age, experience, and qualifications, together with copies of 3 recent testimonials, to be sent to the Group Secretary at the above address.

KILMARNOCK INFIRMARY. Junior Hospital Medical OFFICER (casualty). Now vacant. Offers wide experience in traumatic surgery. Resident. Whitley terms.

Apply immediately to Area Medical Superintendent, 1, Hill-street, Kilmarnock, Ayrshire (Tel.: Kilmarnock 1300).

LEEDS, 14. SEACROFT HOSPITAL. House Officer for Children's Surgical and E.N.T. Wards. Hospital is recognised for D.C.H. 3 or 6 months' appointment.

Applications to Chief Administrative Officer.

LEEDS REGIONAL HOSPITAL BOARD. Short-term LOCUM TENENS appointments in the Registrar grade are constantly available at hospitals in the area of the Board, particularly in the specialties of anæsthetics, general medicine, general and orthopædic surgery, and psychiatry.

Interested practitioners, suitably experienced, should communicate with the Secretary, Joint Registrars Committee, Park-parade, Harrogate.

LEEDS. UNIVERSITY OF LEEDS. UNITED LEEDS HOSPITALS. Applications are invited for the post of SENIOR REGISTRAR AND TUTOR in Orthopædics.

Applications (3 copies), stating date of birth, qualifications and details of present and previous appointments with dates, and experience of teaching, together with the names of 3 referees, should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 19th May, 1958.

LANCASTER. BEAUMONT HOSPITAL, Slyne-road. PÆDIATRIC REGISTRAR (resident). Experience essential of all practical pædiatric techniques (exchange transfusion, blood-transfusion, &c.). Duties include experience in children's medical ward, in neonatal unit, and pædiatric outpatient clinics. Unit recognised for D.C.H. Candidates may visit Hospital by direct appointment.

Applications, together with names of 2 referees, to Group Secretary, Royal Lancaster Infirmary, Lancaster.

LEICESTER ROYAL INFIRMARY. Applications are invited for the resident post of HOUSE SURGEON OR SENIOR HOUSE OFFICER. Available for pre-registration candidates, recognised for the F.R.C.S.

Applications, stating age and qualifications, together with copies of recent testimonials, to the Group Secretary, Leicester No. 1 Hospital Management Committee, The Leicester Royal Infirmary, immediately.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON, Male or Female. This is an approved pre-registration post, the duties of which are with the general surgeon. If satisfactory this post will be followed by an appointment for a second 6 months as House Physician.

Applications, with copy testimonials, should be forwarded to the Group Secretary as soon as possible.

LIVERPOOL, 20. BOOTLE HOSPITAL. Vacancies exist for :—

SENIOR HOUSE SURGEON (general and orthopædic).
HOUSE SURGEON. Recognised pre-registration post.

Apply to Secretary, Walton Hospital, Liverpool, 9.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a post of REGISTRAR in Otorhinolaryngology for the period to 30th September, 1959. Annual reappointment thereafter until completion of the normal period of training will be considered without the need for further application.

Apply by 19th May on form obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

MACCLESFIELD HOSPITAL—Infirmary Branch. Pre-registration HOUSE OFFICER in Surgery, Acute Surgical Unit of 100 Beds. Recognised for F.R.C.S. purposes. Main casualty duties undertaken by Senior Resident Practitioner.

Apply immediately to Group Secretary, Macclesfield and District Hospital Management Committee, Willerby House, Cumberland-street, Macclesfield.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON. 6 months' appointment. Vacant now. Recognised for F.R.C.S. Salary at the rate of £467 10s.–£577 10s. p.a. A deduction at the rate of £125 a year is made for board and lodging, and other services provided.

Applications should be forwarded, as soon as possible, to the Administrative Officer at the Hospital.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of SENIOR RESIDENT HOUSE OFFICER.

Application forms may be obtained from H. R. NORTH, General Superintendent, Manchester Royal Eye Hospital.

MANCHESTER. UNITED MANCHESTER HOSPITALS, ROYAL EYE HOSPITAL, MANCHESTER, 13. SENIOR REGISTRAR in Ophthalmology. Whole-time, non-resident post, tenable for 12 months, renewable. Previous experience essential.

Application form obtainable from the Secretary to the Board of Governors, United Manchester Hospitals, Manchester Royal Infirmary, Manchester, 13, to be returned as soon as possible.

MANCHESTER. UNITED MANCHESTER HOSPITALS, SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of HOUSE OFFICER in Obstetrics for 6 months from 1st July, 1958. Salary in accordance with national scales.

Application forms may be obtained from the undersigned and returned not later than 12th May, 1958.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS, SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited from registered medical practitioners, Male or Female, for 2 posts of HOUSE PHYSICIAN in the Neonatal Unit of Saint Mary's Hospitals (attached to the University Department of Child Heath) for a period of 6 months, 1 vacant immediately, the other vacant on 1st July, 1958. Previous hospital experience essential and pædiatric experience desirable. Duties include the care of the newborn in the Maternity Department, the care of infants in the infants' ward and work in the clinics under the charge of the Department of Child Health. Salary in accordance with national scales.

Applications, stating qualifications and experience together with the names of 3 referees, should be sent to the undersigned not later than 12th May, 1958.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS, SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of OBSTETRICAL HOUSE SURGEON to a maternity unit operating temporarily in the Whitworth Park Branch of the above named Hospital, vacant 15th July, 1958. The post is supernumerary to the establishment recognised for training purposes by the Royal College of Obstetricians and Gynæcologists. Previous obstetrical experience is desirable. An opportunity exists for a limited amount of gynæcological training during tenure of the post. National scale.

Application forms, which may be obtained from the undersigned, to be returned no later than 12th May, 1958.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the appointment of REGISTRAR in Obstetrics and Gynæcology, vacant immediately. Salary at national scales. Initially the appointment will be for 1 year, renewable normally for a second year. The successful candidate will act during the first year as Resident Surgical Officer in the gynæcological branch at Whitworth Park, and possibly during the second year as Resident Obstetric Surgeon in the obstetrical branch of the Hospital at Whitworth-street. The duties include some teaching, the supervision of the work of House Officers and Resident Medical Students, and very considerable clinical responsibility. Candidates must, therefore, have had fairly full previous experience in obstetrics and gynæcology. A higher qualification is not essential.

Forms of application may be obtained from the undersigned. The closing date is 20th May, 1958.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS, SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of SENIOR HOUSE OFFICER in Gynæcology. Applicants must have had previous hospital experience in medicine and surgery. The post is recognised for the purpose of the M.R.C.O.G. examination. The appointment is for 6 months starting 1st July, 1958. Salary in accordance with national scale.

Application forms may be obtained from the undersigned and returned not later than 12th May, 1958.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. BOOTH HALL CHILDREN'S HOS-PITAL, BLACKLEY, MANCHESTER, 9. (380 Beds. Recognised for D.C.H.) RESIDENT SENIOR HOUSE OFFICER (surgical). Duties orthopædic and E.N.T. Post vacant 1st August.

Applications, giving names and addresses of 2 referees, to be sent to Group Secretary, from whom further particulars may be obtained.

MANCHESTER. BOOTH HALL CHILDREN'S HOS-PITAL, BLACKLEY, MANCHESTER, 9. (380 Beds. Recognised for D.C.H.) HOUSE OFFICER (medical), pre- or post-registration. Post vacant 1st August.

Applications, with usual particulars and copies of 2 recent testimonials, to Group Secretary.

MANCHESTER. BOOTH HALL CHILDREN'S HOS-PITAL, BLACKLEY, MANCHESTER, 9. (380 Beds. Recognised for D.C.H.) RESIDENT SENIOR HOUSE OFFICER (medical). Post vacant 1st August.

Applications, giving names and addresses of 2 referees, to be sent to Group Secretary (from whom further particulars may be obtained) not later than 14th May.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER to the Geriatric Department which will become vacant on 1st June, 1958. Resident or non-resident. Duties are primarily in the active medical wards. Excellent experience is available in the unit which has been developed on modern lines and has available full general hospital facilities.

Applications, stating age, qualifications, present post, experience, and the names of 2 referees, to be forwarded to the Group Secretary at the Hospital immediately.

MANCHESTER REGIONAL HOSPITAL BOARD and THE BOARD OF GOVERNORS OF THE UNITED MANCHESTER HOSPITALS. 4 whole-time, non-resident posts of SENIOR HOUSE OFFICER status, commencing mid-October, 1958, tenable for 2 years. Facilities will be granted to attend the University course for the D.M.R.(D) which the successful candidates must be prepared to take and of which details may be obtained from the Dean of Postgraduate Medical Studies, the University of Manchester. Arrangements will be made for trainees to gain wide experience in all branches of radiodiagnosis in several hospitals, including the Teaching Hospital.

Applicants must fulfil the requirements of the Examining Board in England, 8–11, Queen-square, London, W.C.1, for the D.M.R.(D) and must submit written evidence to that effect with their applications, which should be forwarded, with copies of 2 recent testimonials, to the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, by 19th May, 1958.

MANCHESTER REGIONAL HOSPITAL BOARD, South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE, BAGULEY HOSPITAL. (402 Beds.) The Board invite applications for the post of REGISTRAR in Chest Diseases. This Hospital is a large Thoracic Unit, fully equipped for the medical and surgical treatment of tuberculosis and other chest diseases. Attached to the Hospital is a Chest Clinic. The post offers opportunities for wide experience in medical and surgical treatment of patients suffering from tuberculosis and other diseases of the chest, together with chest clinic work. Ample scope for clinical research.

Applications, stating age, qualifications, nationality, experience and the names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, within 7 days of appearance of this advertisement.

MANCHESTER REGIONAL HOSPITAL BOARD. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. The Board invite applications from registered practitioners for the post of RESIDENT SURGICAL OFFICER (Registrar grade) at the Christie Hospital and Holt Radium Institute. The post provides unique experience in the treatment of tumours and good opportunity for study.

Applications, with full details, including the names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, immediately.

MORECAMBE. QUEEN VICTORIA HOSPITAL. RESIDENT SENIOR HOUSE OFFICER (surgical). The post is normally tenable 1 year and the successful applicant will be attached to the specialist surgical unit.

Applications, with names of 2 referees, to be addressed to the Group Secretary, Royal Lancaster Infirmary, Lancaster.

MORECAMBE. QUEEN VICTORIA HOSPITAL. (100 Beds.) RESIDENT CASUALTY OFFICER (Junior Hospital Medical Officer grade). Post tenable for 1 year.

Applications, with names of 2 referees, to Group Secretary, Royal Lancaster Infirmary, Lancaster.

NEWARK GENERAL HOSPITAL. Nottingham No. 1 HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (medical) required for above Hospital situated on Great North-road, approximately 20 miles from Nottingham. Post offers good experience. Consultant staff attending Newark Hospital are on 1 or more of the Nottingham Hospitals. Flat available as married quarters. Salary and conditions of service in accordance with Ministry regulations. Duties to commence about 29th April, 1958.

Applications, giving names of 3 referees, should be sent to Group Secretary, Nottingham No. 1 Hospital Management Committee, General Hospital, Nottingham.

NEWCASTLE GENERAL HOSPITAL. Department of OBSTETRICS AND GYNÆCOLOGY. (100 Beds.) Applications are invited for the post of HOUSE SURGEON (resident) in the Department of Obstetrics and Gynæcology. This department is recognised for the M.R.C.O.G. and D.Obst.R.C.O.G., and undertakes the training of medical students in the University of Durham. Preference will be given to provisionally registered candidates who have carried out their first appointment.

Applications, together with names and addresses of 2 referees, should be sent to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4.

NEWCASTLE GENERAL HOSPITAL. Newcastle UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (general surgery). Resident. Recognised for F.R.C.S. Diploma.

Applications, together with names and addresses of 2 referees, should be sent to the Secretary, Newcastle General Hospital, Newcastle upon Tyne, 4.

NEWCASTLE REGIONAL HOSPITAL BOARD. Senior REGISTRAR PHYSICIAN, whole-time, for Geriatric Unit, Sunderland Group of hospitals. Total geriatric beds 497, primarily at Sunderland General (217); Ryhope General (96); Leeholme (152); Boldon Hospital (32). A Research Unit is associated with the Geriatric Department.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Locum REGISTRAR PHYSICIAN, whole-time for Geriatric Unit, Sunderland Group of hospitals. Total geriatric beds (497), mainly at Sunderland General Hospital (217).

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, immediately.

NEWCASTLE REGIONAL HOSPITAL BOARD. Regis-TRAR SURGEON, whole-time, South Shields Group of hospitals —main hospital Ingham Infirmary 165 Beds. Post recognised for F.R.C.S. Single accommodation available.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, within 14 days.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. ROYAL VICTORIA INFIRMARY. Applications are invited for the whole-time non-resident appointment of SENIOR REGISTRAR OPHTHALMOLOGIST, in the first year tenable at the Royal Victoria Infirmary, which is the teaching hospital of the University of Durham. The successful candidate will have opportunity for clinical experience in outpatient and inpatient work under the direction of the Head of the Department and will be responsible for clinical emergency duty as required. Applicants must possess the D.O.M.S. or higher qualification. The appointment is for 1 year in the first instance, and may be renewed to a maximum of 4 years. In any reappointment the successful candidate may be required to undertake duty in a hospital under the Newcastle Regional Hospital Board. The appointment will be subject to the terms and conditions of service of hospital medical staff in the National Health Service.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Queen Victoria-road,

Newcastle upon Tyne, 1.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. ROYAL VICTORIA INFIRMARY. Applications are invited for the whole-time non-resident appointment of SURGICAL REGISTRAR at the above Hospital. The appointment will be for 1 year in the first instance and will be subject to the terms and conditions of service of hospital medical staff in the National Health Service.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne, 1.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. ROYAL VICTORIA INFIRMARY. Applications are invited for the non-resident appointment of SURGICAL REGISTRAR in the Department of Ophthalmology at the above Hospital, which is the teaching hospital of the University of Durham. The post will offer scope to prepare for a higher degree. The appointment will be for 1 year in the first instance and will be subject to the terms and conditions of service of hospital medical staff in the National Health Service.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne, 1.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. ROYAL VICTORIA INFIRMARY. Applications are invited for the temporary appointment of ASSISTANT RESIDENT MEDICAL OFFICER at the above Hospital. The appointment will be subject to the terms and conditions of service of hospital medical staff in the National Health Service, and the salary will be that for a Locum Senior House Officer (£15 19s. per week) with appropriate deductions for residential emoluments.

Applications, giving full details and the names and addresses of 2 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne, 1.

NEWPORT, I.W. ST. MARY'S HOSPITAL. Isle of WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON (Senior House Officer grade) required at once. Salary £819 10s. Accommodation for married candidates available.

Applications to Hospital Secretary immediately.

NORTH WEST METROPOLITAN REGIONAL HOS- PITAL BOARD.

REGISTRAR (obstetrics and gynæcology) for Edgware General Hospital, Edgware, Middlesex. The Unit has 120 Beds. Possession of higher qualification desirable. Furnished married accommodation becoming available, if required.

RESIDENT REGISTRAR (obstetrics and gynæcology) for Edgware General Hospital, Edgware, Middlesex, and Bushey Maternity Hospital. Possession of higher qualification desirable. The successful candidate will be required to be in residence at Bushey Maternity Hospital, Bushey Heath, Herts (4¼ miles from Edgware) where married quarters are available, if required.

Both posts vacant 25th May, 1958.

Hospitals may be visited by direct appointment with the Medical Administrator, Edgware General Hospital.

Application forms obtainable from and returnable to Group Secretary, Hendon Group Hospital Management Committee, Edgware General Hospital, Edgware, Middlesex, by 17th May, 1958.

NOTTINGHAM CITY HOSPITAL. (811 Beds.) Applica- tions are invited for the post of HOUSE SURGEON, vacant 4th May, 1958. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. HIGHBURY HOSPITAL, Bulwell, Not- TINGHAM. SENIOR HOUSE OFFICER (medical), resident, required. Duties to commence on 23rd May, 1958. The successful candidate will, in addition to medical duties, have an opportunity of assisting in the obstetric unit. This post will be accepted as a general medical appointment entry to the M.R.C.O.G. examination.

Apply in writing, stating age, qualifications and experience together with copies of testimonials, to the Hospital Secretary.

OXFORD REGIONAL HOSPITAL BOARD. Senior REGISTRAR in Anæsthetics to the hospitals of the Aylesbury/High Wycombe area. Duties mainly in Aylesbury area. Appointment for 1 year in the first instance, eligible for extension up to 4 years. Vacant mid-June.

Applications, on forms obtainable from the Secretary, Joint Committee for Senior Registrars, 43, Banbury-road, Oxford, by 27th May.

OXFORD REGIONAL HOSPITAL BOARD. Registrar in Pathology to Stoke Mandeville Hospital. This is a central clinical laboratory serving Stoke Mandeville and the Aylesbury Hospitals and acting as parent to High Wycombe and Amersham laboratories. It is closely connected with research projects being undertaken at Stoke Mandeville Hospital Appointment for 1 year in the first instance, eligible for extension for a second year. Applicants may visit Stoke Mandeville by arrangement with the Pathologist. Vacant 1st October.

Application forms from the Secretary, Registrars Committee, 43, Banbury-road, Oxford, by 31st May.

OXFORD. UNITED OXFORD HOSPITALS (the teaching hospital group associated with the University of Oxford). Applications are invited for the post of FIRST ASSISTANT (Senior Registrar) in the Department of Otolaryngology at the Radcliffe Infirmary. The appointment is full-time and duties lie mainly within the United Oxford Hospitals, but they carry honorary attachment at certain hospitals of the Regional Hospital Board in connection with visits made to those hospitals by Oxford Consultants. Candidates must hold the Diploma of Fellowship of a Royal College of Surgeons and must have had satisfactory experience in the specialty as Registrar.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should be received not later than Saturday, 24th May, 1958, and further particulars may be obtained from the Director of the Department.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL, FREEDOM FIELDS. Central Casualty Department. RESIDENT SENIOR HOUSE OFFICER in Casualty, vacant immediately. Recognised for the F.R.C.S.

Applications, with names of 3 referees, to be sent to the Group Secretary.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. Vacancies exist in the following departments :—

HOUSE PHYSICIANS, vacancies 3rd and 15th July, 1958. Greenbank Road Hospital.

HOUSE PHYSICIAN, vacant 1st July, 1958. Freedom Fields Hospital.

SENIOR HOUSE OFFICER in Surgery, vacant 1st June, 1958. Recognised for the F.R.C.S. Devonport Hospital.

HOUSE SURGEON, vacant 1st June, 1958. Recognised for the F.R.C.S. Devonport Hospital. Pre-registration post.

HOUSE SURGEONS, vacancies 1st, 9th June, and 1st July, 1958. Recognised for the F.R.C.S. Pre-registration posts. Greenbank Road Hospital.

HOUSE SURGEONS, vacancies 2, both on 1st July, 1958. Recognised for the F.R.C.S. Pre-registration posts. Freedom Fields Hospital.

SENIOR HOUSE OFFICER in Anæsthetics, vacant 1st July, 1958. Recognised for the D.A. and F.F.A. R.C.S.

In all cases send names of 3 referees, also stating age, nationality, qualifications and experience, to Group Secretary, 7, Nelson-gardens, Devonport.

PONTYPRIDD (near). EAST GLAMORGAN HOS- PITAL, CHURCH VILLAGE. (336 Beds and large Outpatient Department—serving population of 174,000.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (pathology). The post is to 30th September, 1958, in the first instance. Previous experience in pathology not essential. Emergency duties are shared with other residents.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Courthouse-street, Pontypridd, as soon as possible.

POOLE GENERAL HOSPITAL, Poole, Dorset. (262 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. CASUALTY OFFICER (Senior House Officer) required immediately. Resident or non-resident; self-contained flat may be available. No weekend duties. Post suitable for persons reading for higher diplomas.

Applications to the Hospital Secretary.

PORTH AND DISTRICT HOSPITAL, Porth, Rhondda. (110 Beds—visited regularly by Consultants from Cardiff Royal Infirmary.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE.

RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER (surgery). Married quarters available if required.

Locum JUNIOR HOSPITAL MEDICAL OFFICER (surgery) required immediately until permanent appointment is made.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Courthouse-street, Pontypridd.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Royal Portsmouth Hospital

HOUSE SURGEON (pre-registration), vacant now.

St. Mary's Hospital

HOUSE SURGEON, (pre-registration) vacant now.

Applications, stating age, experience and qualifications, together with the names of 2 referees, should be forwarded as soon as possible to E. H. HURST, St. Mary's Hospital, Milton-road, Portsmouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of ANÆSTHETIC REGISTRAR, vacant 16th May, 1958, in the Portsmouth Group, main duties at Saint Mary's Hospital. The post offers experience in midwifery, thoracic surgery and respiratory poliomyelitis. The establishment includes 6 consultant anæsthetists and 1 Senior Registrar. Post recognised for the F.F.A. R.C.S.

Forms of application may be obtained from the Group Secretary, Portsmouth Group Hospital Management Committee, Saint Mary's Hospital, Milton, Portsmouth, which should be returned to him duly completed on or before 12th May, 1958. Canvassing will disqualify. Candidates may visit the above Hospital by arrangement with the Secretary of the Group.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of MEDICAL REGISTRAR to the Portsmouth Group of hospitals. 1 of 2 for a total of 220–230 acute medical beds. Vacant on 1st June, 1958.

Forms of application may be obtained from the Group Secretary, Portsmouth Group Hospital Management Committee, Saint Mary's Hospital, Milton, Portsmouth, which should be returned to him duly completed on or before 12th May, 1958. Canvassing will disqualify. Candidates are cordially invited to visit the Hospitals by arrangement with the Group Secretary.

RETFORD, NOTTINGHAMSHIRE. RAMPTON HOS- PITAL. (1143 Beds for defectives of both sexes.) SENIOR REGISTRAR. Psychiatric experience essential; D.P.M. or Part I thereof desirable. Excellent opportunities for study and research into psychopathic disorders. Modern house available (or flat, if single). Candidates may visit Hospital by appointment.

Applications, naming 3 referees, to Medical Superintendent by 23rd May, 1958.

RICHMOND, SURREY. ROYAL HOSPITAL. Pre- registration HOUSE PHYSICIAN required 14th May, 1958, for busy Acute General Hospital of 121 Beds with full Consultant staff.

Applications invited immediately (acceptable in advance of examination results), giving age, qualifications, and names of 2 referees, to Administrative Officer.

ROCHDALE AND DISTRICT HOSPITAL MANAGE- MENT COMMITTEE. HOUSE OFFICER (surgery) required immediately for busy Surgical Unit. Post recognised for F.R.C.S. qualification and offering excellent experience.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

READING AREA DEPARTMENT OF MEDICINE. Applications invited from registered and provisionally registered medical practitioners for 2 RESIDENT HOUSE PHYSICIAN posts, for 6 months from 1st June. Successful candidates required to carry out duties at following Reading Hospitals: Royal Berkshire (397 Beds) and Prospect Park (104 Beds).

Write, stating age, qualifications with dates, nationality, present post, with copies of 2 recent testimonials, to Secretary, Royal Berkshire Hospital, Reading.

READING. BATTLE HOSPITAL. (391 Beds.) Reading AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for 2 posts of RESIDENT JUNIOR HOUSE SURGEON (pre- or post-registration) required in the Accident and Orthopædic Department. F.R.C.S. recognised. Also casualty duties. Vacant 1st and 18th May, 1958.

Apply, stating age, qualifications with dates, nationality, present post, with copy of recent testimonial, to Secretary.

READING COMBINED HOSPITALS. Area Department OF OBSTETRICS AND GYNÆCOLOGY. (100 Beds.) Applications invited from registered medical practitioners for resident post of HOUSE SURGEON. Post vacant. The appointment, recognised for M.R.C.O.G., is for 1 year, with 6 months' gynæcology at Royal Berkshire Hospital, and 6 months in Maternity Unit at Battle Hospital.

Write, stating age, qualifications with dates, nationality and present post, with copy of recent testimonial, to Secretary, Royal Berkshire Hospital, Reading.

READING. ROYAL BERKSHIRE HOSPITAL. (339 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the post of RESIDENT SENIOR HOUSE OFFICER (anæsthetics). Vacant 1st May, 1958, for a period of 1 year. Post recognised for F.F.A. R.C.S.

Write, stating age, qualifications with dates, nationality and present post, together with names of 3 referees, to Group Secretary, Reading and District Hospital Management Committee, 3, Craven-road, Reading.

READING. ROYAL BERKSHIRE HOSPITAL. (397 Beds.) Applications are invited from registered and provisionally registered medical practitioners for 2 RESIDENT HOUSE SURGEON posts (1 immediately, 1 1st June) for 6 months.

Write, stating age, qualifications with dates, nationality, present post, with copies of 2 recent testimonials, to Secretary.

ROCHFORD, ESSEX. GENERAL HOSPITAL. Locum MEDICAL REGISTRAR required 13th May, 1958, pending the post being filled by the Regional Hospital Board.

Applications to the undersigned immediately.

J. C. FIELD, Secretary.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER required from 3rd June, 1958, in the Obstetric and Gynæcological Unit consisting of 96 obstetric and 52 gynæcological beds. Post recognised for the D.Obst.R.C.O.G. and M.R.C.O.G.

Applications should be addressed to the Secretary, Romford Group Hospital Management Committee, at the Hospital as soon as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT PÆDIATRIC HOUSE PHYSICIAN (Male or Female) required from 4th June, 1958. The Department includes a Premature Baby Unit of 9 cots and 50 children's medical beds.

Applications should be addressed to the Secretary, Romford Group Hospital Management Committee, at the Hospital as soon as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) ORTHOPÆDIC HOUSE SURGEON (resident) required in the Orthopædic and Accident Unit from 26th May, 1958. The service consists of 100 Beds equally divided between traumatic surgery and "cold" orthopædics. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications to be sent to Group Secretary, Romford Hospital Management Committee, Oldchurch Hospital, as soon as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER (neurosurgery) required from 21st June, 1958. Suitable for candidates seeking higher medical or surgical qualifications. Recognised for the F.R.C.S. (Eng.).

Apply to Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) RESIDENT HOUSE SURGEON (Male) required immediately. Not pre-registration appointment.

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

SCOTLAND. SOUTH-EASTERN REGIONAL HOS-PITAL BOARD. 2 REGISTRARS to the South-Eastern Regional Orthopædic Service. The duties will be mainly to the Royal Infirmary of Edinburgh and the Princess Margaret Rose Hospital.

Apply, giving particulars of age, previous experience and qualifications, together with the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 24th May, 1958. Further particulars can be obtained on application.

SCOTLAND. SOUTH-EASTERN REGIONAL HOS-PITAL BOARD. REGISTRAR in the Regional Thoracic Surgery Unit based on the Eastern General Hospital, Edinburgh.

Apply, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 24th May, 1958.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPI-TAL BOARD. SENIOR REGISTRAR in Radiodiagnosis to the Edinburgh Northern Group of hospitals.

Apply, giving particulars of age, qualifications and previous experience, and the names of 3 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 17th May, 1958.

SCOTLAND. SOUTH-EASTERN REGIONAL HOS-PITAL BOARD. REGISTRAR in Surgery in the Royal Infirmary of Edinburgh.

Apply, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 24th May, 1958.

SCOTLAND. SOUTH-EASTERN REGIONAL HOS-PITAL BOARD. 2 REGISTRARS in the Regional Pool of Anæsthetists based on the Royal Infirmary of Edinburgh. The successful candidates will be seconded for periods of duty in peripheral hospitals, details of which may be obtained on application.

Apply, stating age, qualifications and previous experience and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 24th May, 1958.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance:—

REGISTRAR in Psychiatry based at Riccartsbar Mental Hospital, Paisley, Renfrewshire.

REGISTRAR in Psychiatry based at Bellsdyke Mental Hospital, Larbert.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 17th May, 1958.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will become vacant during July or August, and will be for 1 year in the first instance:—

3 REGISTRARS in Anæsthetics:—
- 1 based at the Royal Infirmary, Glasgow.
- 1 based at the Western Infirmary, Glasgow.
- 1 based at the Law Hospital, Carluke.

REGISTRAR in E.N.T. Surgery based at the Southern General Hospital, Glasgow.

4 REGISTRARS in Laboratory Medicine:—
- 3 based at the Western Infirmary, Glasgow.
- 1 based at the Royal Infirmary, Glasgow, with duties in Lanarkshire.

2 REGISTRARS in Medicine:—
- 1 based at the Royal Infirmary, Glasgow.
- 1 based at the Law Hospital, Carluke.

2 REGISTRARS in Obstetrics and Gynæcology:—
- 1 based at Stobhill General Hospital, Glasgow.
- 1 based at Bracheolm Maternity Hospital, Helensburgh.

2 REGISTRARS in Psychiatry based at the Crichton Royal Mental Hospital, Dumfries, 1 with duties primarily in Child Guidance.

2 REGISTRARS in Surgery:—
- 1 based at the County Hospital, Stonehouse, Lanarkshire.
- 1 based at the Neurosurgical Unit, Killearn Hospital, Stirlingshire.

REGISTRAR in Tuberculosis based at Robroyston Hospital, Glasgow.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 17th May, 1958.

SCUNTHORPE. WAR MEMORIAL HOSPITAL. (262 Beds.) Vacancy for HOUSE SURGEON late May. Pre-registration or Senior House Officer according to experience. Busy hospital with large surgical turnover.

Applications, naming 2 referees, to Group Secretary, Scunthorpe Hospital Management Committee.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS AND SHEFFIELD REGIONAL HOSPITAL BOARD. Rheumatic Diseases Research. The Sheffield Centre for the Investigation and Treatment of Rheumatic Diseases is engaged in chemical and clinical research on behalf of the severe rheumatic diseases and a REGISTRAR is required. Work suitable for an M.D. thesis is envisaged. Interest in this line of work more important than previous experience.

Applications, with the names of 3 referees, to the Chief Administrative Officer, United Sheffield Hospitals, West-street, Sheffield, 1, not later than 17th May, 1958.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the following posts at the Royal Infirmary Unit:—

(*a*) SENIOR HOUSE OFFICER in Anæsthetics. Vacant 1st July, 1958.

(*b*) 2 RESIDENT SENIOR HOUSE OFFICERS in Clinical Pathology. Posts vacant 15th and 25th July. Pathological experience not essential, but candidates must have previous clinical experience. Successful candidates will work in turn in the different branches of clinical pathology in the laboratories of the United Sheffield Hospitals.

Applications for the above posts, with the names of 3 referees, should be sent to the Superintendent, Royal Infirmary, Sheffield, 6, immediately.

ST. ALBANS, HERTFORDSHIRE. CELL BARNES HOSPITAL. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR required at above Hospital. This is a modern hospital where 895 mental defectives of all types and ages are under care. Approved for D.P.M. Good pædiatric experience available. Hospital may be visited by direct appointment.

Application forms obtainable from the Group Secretary, Harperbury Hospital, St. Albans, Herts.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) HOUSE PHYSICIAN (House Officer grade) required for 1 of the 2 medical teams. Post vacant 3rd June, 1958, and tenable for 6 months. Preference given to candidates seeking post under the Medical Act, 1950.

Applications to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) Locum Tenens ANÆSTHETIC REGISTRAR, resident, required from 9th to 16th May, 1958, inclusive. Post recognised for F.F.A. R.C.S. and D.A.

Applications to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST. ALBANS CITY HOSPITAL. (384 Beds.) North West METROPOLITAN REGIONAL HOSPITAL BOARD. CASUALTY OFFICER (Registrar grade) required. Post recognised for F.R.C.S. regulations. Appointment tenable for 6 months from approximately 27th May, 1958, and subject to review at end of this period.

Application forms obtainable from and returnable to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, Hertfordshire.

SHOREHAM-BY-SEA, SUSSEX. SOUTHLANDS HOSPITAL. Applications are invited for the appointment of SENIOR HOUSE OFFICER (gynæcology) (55 obstetric beds, 29 gynæcological beds). Vacant on 8th June, 1958, tenable for 1 year, and recognised for the M.R.C.O.G. The duties are mainly concerned with gynæcological beds, relieving Registrar and Obstetrical House Officer in Obstetrical Department.

Applications, giving full particulars of qualifications and experience, together with the names of 2 referees, to whom application may be made to be sent immediately, to the Secretary, Southlands Hospital.

A. V. OAKTON, Group Secretary,
Worthing Group Hospital Management Committee.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) SENIOR HOUSE OFFICER (casualty), resident or non-resident. Duties from 9 A.M. to 6 P.M. daily, except Saturday which will be 9 A.M. to 1 P.M. Applicant required to do 1 weekend's duty in 3. Post recognised for F.R.C.S. Vacant 1st June, 1958.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY/COP-THORNE HOSPITAL. (500 Beds.) HOUSE SURGEON. Vacant 1st May, 1958. Pre-registration candidates eligible. Recognised for the F.R.C.S.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY/COP-THORNE HOSPITAL. (500 Beds.) HOUSE SURGEON. Vacant immediately. Pre-registration candidates eligible. Recognised for the F.R.C.S.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SKIPTON (near). GRASSINGTON HOSPITAL. (208 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER required for the above Hospital, which provides treatment for tuberculous patients, men and women. Accommodation available for single applicants.

Applications to Medical Superintendent.

SOUTHAMPTON CHILDREN'S HOSPITAL. (Recog-nised by Conjoint Board for D.C.H.) HOUSE OFFICER required. Total establishment of 3 residents. Salary, &c., as nationally advocated.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GENERAL HOSPITAL. (465 Beds. Recognised for F.R.C.S.) RESIDENT HOUSE SURGEON required beginning of June (pre-registration candidates eligible).

Applications should be forwarded to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GENERAL HOSPITAL. (465 Beds.) RESIDENT HOUSE OFFICER in General Medicine with some Neurological work under the supervision of the Area Neurologist. Pre-registration candidates eligible.

Applications should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHEND. GENERAL HOSPITAL. (262 Beds.) Applications are invited from registered or provisionally registered practitioners for 2 posts as RESIDENT HOUSE SURGEONS. 1 post now vacant; second post vacant 4th June, 1958.

Applications, stating age, qualifications and previous experience, with copies of recent testimonials (1 testimonial sufficient from applicants for first appointment), should reach the undersigned by 8th May, 1958. J. C. FIELD, Secretary.

SOUTHPORT PROMENADE HOSPITAL. (214 Beds.) SENIOR HOUSE OFFICER (Physician), resident. Post vacant June.

Apply, stating age, experience, qualifications, nationality, and enclosing copies of 2 recent testimonials, to Group Secretary, Southport and District Hospital Management Committee, Promenade Hospital, Southport.

STIRLING AND CLACKMANNAN HOSPITALS BOARD OF MANAGEMENT. There is an immediate vacancy for a HOUSE SURGEON for the period until 31st July, 1958.

Applications should be sent immediately to the Group Medical Superintendent, Royal Infirmary, Stirling.

STIRLING AND CLACKMANNAN HOSPITALS BOARD OF MANAGEMENT. There is an immediate vacancy for a Locum SENIOR HOUSE OFFICER in General Surgery at Clackmannan County Hospital for approximately 3 months.

Applications, giving 2 names for reference, should be sent immediately to the Group Medical Superintendent, Stirling Royal Infirmary.

STOCKPORT INFIRMARY. (163 Beds.) Applications are invited for the post of HOUSE OFFICER (general surgery), vacant 3rd June, 1958. This is an approved pre-registration post and is recognised for the F.R.C.S.

Applications, with copies of 2 testimonials, to the Group Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE OFFICER (general surgery) required. Recognised for F.R.C.S. Post vacant very shortly.

Detailed applications, with copy testimonials, to Hospital Secretary, as soon as possible.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. Applications invited for post of RESIDENT SENIOR HOUSE OFFICER to Special Unit for Juvenile Rheumatism, vacant 14th May. Post offers scope for those interested in research, pædiatrics, rheumatology or cardiology, and previous experience in one of these is desirable. The post is tenable for 1 year in the first instance.

Applications, stating age, qualifications, experience with dates, and copies of 3 testimonials, to Secretary.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE SURGEON required immediately. Pre-registration post.

Applications, stating age, qualifications, with dates, and copies of 2 testimonials, to Secretary.

TAUNTON AND SOMERSET HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (obstetrics and gynæcology). Vacant 11th May, 1958. The department consists of the Area Maternity Unit of 50 Beds (recently modernised and extended) and a Gynæcological Ward of 25 Beds. Recognised for the M.R.C.O.G.

Applications, stating age, qualifications, nationality and experience, together with the names of 2 referees, should be forwarded immediately to the Group Secretary, Taunton Hospital Management Committee, c/o Musgrove Park Hospital, Taunton, Somerset.

WAKEFIELD. STANLEY ROYD HOSPITAL. Applications invited for post of JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER in Psychiatry. Accommodation available for a single person.

Address written applications, giving full personal particulars, details of training, experience, &c., and 2 names and addresses for reference, to W. BOWRING, Group Secretary, Pinderfields General Hospital, Wakefield.

WARRINGTON INFIRMARY. Applications are invited from Males and Females for the post of RESIDENT CASUALTY OFFICER (graded as Junior Hospital Medical Officer) at the above Hospital. The post is recognised for the F.R.C.S. Scale of salary £852 10s.–£55–£1182 10s. less a deduction of £170 for residential emoluments. A whole-time Senior Hospital Medical Officer is in charge of the Department.

Applications, stating age, experience and qualifications, should be forwarded to:—

HENRY L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARWICK (near). KING EDWARD VII MEMORIAL CHEST HOSPITAL. (Diseases of the chest. 228 Beds.) SENIOR HOUSE OFFICER, resident preferable. Hospital is modern with Thoracic Surgery Unit.

Applications to Medical Superintendent.

WATFORD. SHRODELLS HOSPITAL. (General Hos-pital. 320 Beds.) Applications are invited for the post of HOUSE PHYSICIAN (pre- or post-registration), to take up duty in the middle of May.

Applications, with copies of 2 recent testimonials, should reach the Medical Officer-in-Charge as soon as possible.

WELSH REGIONAL HOSPITAL BOARD.

REGISTRAR in Anæsthetics. Based at East Glamorgan Hospital, Church Village, near Pontypridd (a modern general hospital of 316 Beds with special departments including thoracic surgery), and will also be expected to serve other hospitals in the group. Post recognised for F.F.A. R.C.S. The successful candidate will be given the opportunity of regularly attending the Department of Anæsthetics at Cardiff. Resident/non-resident.

REGISTRAR (plastic surgery), St. Lawrence Hospital, Chepstow (182 Beds). Expected to visit other hospitals in South Wales area. Considerable opportunities for training in specialty. Accommodation for single person.

REGISTRAR (anæsthetics) to serve Caernarvon and Anglesey Hospital Management Committee Group. Successful applicant, based Caernarvon and Anglesey General Hospital, Bangor, will work at other hospitals in Group. Post recognised for F.F.A. R.C.S. and D.A. Non-resident.

REGISTRAR in Psychiatry, based Pen-y-Val Hospital, Abergavenny, Mon. Full range of modern psychiatric treatments and a number of associated general hospital outpatient clinics. Resident. Married or single quarters available.

Subject to review end of first year.

Applications forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD. Surgical REGISTRAR (orthopædics) at Prince of Wales Orthopædic Hospital, Rhydlafar (280 Beds) serving Cardiff Hospital Management Committee. Hospital is Regional Orthopædic Centre for South Wales area. Married accommodation available. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WEST CUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER in Anæsthetics required for work throughout the West Cumberland Group but based on Whitehaven Hospital. Good experience essential, and possession of the D.A. preferred.

Apply, with full information as to qualifications and experience, and giving the names of 2 referees, to the Group Secretary at Workington Infirmary.

WHITEHAVEN HOSPITAL, Cumberland. (119 Beds, pre-registration post, recognised F.R.C.S.(Ed.).) HOUSE SURGEON (first, second, or Senior House Officer post). Vacant beginning of April.

Detailed applications with dates, and names of 2 referees, to Secretary, Workington Infirmary, Cumberland.

WEYMOUTH AND DISTRICT HOSPITAL. (124 Beds.) HOUSE SURGEON (Male or Female) required for resident pre-registration post. Recognised for F.R.C.S. examination and tenable for 6 months.

Applications, stating age, qualifications, together with copy testimonials, to Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. ASTLEY HOSPITAL, ASTLEY, near MANCHESTER. SENIOR HOUSE OFFICER in Surgery required. Duties include gynaecology and casualty. Resident post. Vacant now.

Apply Secretary, Knowsley House, Wigan.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (327 Beds.) HOUSE SURGEON (post recognised by Royal College of Surgeons) required for general surgery with some E.N.T. duties. Approved pre-registration post. Vacant immediately.

Applications, with copies of 2 testimonials, to Group Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (327 Beds.) HOUSE SURGEON to the Senior Surgeon. Post vacant immediately.

Applications, with copies of 2 testimonials, to the Group Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (327 Beds.) SENIOR HOUSE OFFICER (orthopædics) required. Post recognised F.R.C.S. Wide experience available under Area Orthopædic team. Vacant end of May.

Applications, with copies of 2 testimonials, to Group Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. House SURGEON in General and Orthopædic Surgery required, Male or Female, for post vacant 29th May. Recognised for F.R.C.S. Pre-registration post.

Applications, stating age, nationality qualifications with dates, and copies of recent testimonials, to Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. Registrar (Casualty Officer), resident, required immediately. There is an Accident Unit of 30 Beds at the Hospital and with the Casualty Department forms part of the Accident Service for the Windsor Group and includes duties with the E.N.T. and Eye Departments. Candidates should have had previous experience in the treatment of acute injuries.

Application forms from and returnable to Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor.

WOLVERHAMPTON. THE ROYAL HOSPITAL. (An associated hospital of the Birmingham University Medical School.) SENIOR HOUSE OFFICER (anaesthetics). Post vacant 21st May. Recognised for D.A. and F.F.A. R.C.S. Flat available for married applicant.

Apply, with copies of 2 testimonials, to the Secretary.

WOLVERHAMPTON. THE ROYAL HOSPITAL. (An associated hospital of the Birmingham University Medical School.) ORTHOPÆDIC SENIOR HOUSE SURGEON for Fracture and Orthopædic Department. Post recognised for F.R.C.S. Vacant immediately.

Apply, with 2 testimonials, to the Secretary.

WORCESTER ROYAL INFIRMARY. (213 Beds.) Senior HOUSE OFFICER (surgical) required at this busy acute Hospital which is the consultative and accident centre of the Group. The post, which is recognised for the F.R.C.S. examinations, is deputy to the Surgical Registrar and involves some orthopædic work.

Applications to Hospital Secretary.

WORKINGTON INFIRMARY, Cumberland. (155 Beds, pre-registration post, recognised F.R.C.S.(Ed.).) HOUSE SURGEON (first, second or Senior House Officer post).

Detailed applications with dates, and names of 2 referees, to Secretary.

YORK. COUNTY HOSPITAL. (General hospital of 266 Beds with full Consultant staff.) SENIOR HOUSE OFFICER in Ophthalmology required immediately. Post is recognised for D.O. and F.R.C.S.

Applications, giving age, qualifications, experience, nationality, and names of 2 referees, to Group Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

YORK MILITARY HOSPITAL (Civilian Wing, 60 Beds). SENIOR HOUSE OFFICER required immediately, resident or non-resident. There are 30 general surgical and 30 medical beds. The Hospital is associated with the County Hospital (general, 266 Beds) where relief casualty and emergency work and relief work for House Surgeons may be undertaken, and where residence can be provided.

Applications, stating age, nationality, experience, qualifications and names of 2 referees, to Group Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

CORK SANATORIA BOARD. Vacancy for House Surgeon, St. Stephen's Hospital, Sarsfieldscourt. Remuneration: £516–£676 p.a.

Application forms and particulars may be obtained from The County Manager, Courthouse, Cork, with whom completed applications should be lodged not later than 12 o'clock noon on Saturday, 17th May, 1958.

CANADA. ST. PAUL'S HOSPITAL, Vancouver, British COLUMBIA, CANADA. Applications are invited for 1 year JUNIOR ROTATING INTERNESHIPS at approved large general hospital. Remuneration $175 per month.

Apply Sister Superior, St. Paul's Hospital, 1081 Burrard-street, Vancouver, B.C., Canada. Canadian, American or British graduates only are acceptable.

NEW YORK. NEW ROCHELLE HOSPITAL, New ROCHELLE, NEW YORK, U.S.A. (383-Bed general community hospital.) Approved by the Joint Commission on Accreditation of Hospitals. Also approved by the American College of Surgeons and American Medical Association for Internship and Residency training. Only graduates from approved university schools accepted. Internships available for the 1-year term commencing 1st July, 1958. Stipend is $200 per month plus complete maintenance.

Apply Superintendent.

MICHIGAN, U.S.A. OAKWOOD HOSPITAL, Dearborn, MICHIGAN. Applications are invited for 1 year approved ROTATING INTERNSHIP beginning 1st July, 1958. 234-Bed General Hospital 10 miles from Detroit. Excellent facilities. Hospital approved for exchange-visitor programme. Salary $200 if single, $250 if married. Housing rent-free.

Apply Director.

TORONTO EAST GENERAL HOSPITAL, Canada. JUNIOR ROTATING INTERNESHIPS are available at the Toronto East General Hospital. This Hospital is 750 Beds in size and is located in the eastern section of Metropolitan Toronto. Clinical departments consist of medicine, surgery, obstetrics and gynaecology, ophthalmology, otolaryngology, orthopædics, pædiatrics, anaesthesia, and the diagnostic specialties. Provision is made in the rotation schedule for study and service in each of these departments. Excellent opportunities are available to the graduate for subsequent establishment of a general practice in the surrounding community. Residencies are also considered in the Department of Medicine, General Surgery, Obstetrics and Gynaecology, Radiology, Anaesthesia, &c., on completion of Junior Internships. The annual stipend is $1000 plus $60 per month cash food allowance and $4 per month laundry allowance. Excellent accommodation is available in a new Internes' residence situated on the Hospital grounds.

Letters of application may be directed to the Superintendent, Toronto East Central Hospital, Toronto 6, Canada.

U.S.A. BOSTON CITY HOSPITAL. 3 Harvard Second-year PSYCHIATRIC RESIDENCIES (approximately equivalent to second year as Registrar) at above Hospital beginning 1st July, 1958. Requisite are 1 year each of postgraduate medical and psychiatric training. Concurrent appointment as Teaching Fellow in Psychiatry, Harvard Medical School. Total salary $222 per month and complete maintenance. Supervised psychoanalytically oriented psychotherapy in outpatient clinic, consultations, small recently opened inpatient ward.

Please apply to Dr. PHILIP SOLOMON, 57, Chatham-street, Brookline, Massachusetts.

Public Appointments

MINISTRY OF LABOUR AND NATIONAL SERVICE. Medical Boards and Disablement Advisory Committees. From time to time VACANCIES occur in the panels of medical practitioners who are prepared to serve, as required, as members of National Service Medical Boards. Such boards meet at intervals according to the requirements of the area and payment is on a sessional basis. A general practitioner, wishing to be considered for any vacancy which might arise in the panel of the medical board nearest to the district in which he resides, should make his wish known to the appropriate local medical committee or to the Secretary, Ministry of Labour and National Service, Baynards House, 1–13, Chepstow-place, Westbourne-grove, London, W.2.

Occasional vacancies also occur in the membership of that department's Disablement Advisory Committees and their panels. Membership of a Disablement Advisory Committee is unpaid but service on panels is remunerated on a sessional basis. A general practitioner wishing to be considered for such appointments should similarly apply to his local medical committee or the Secretary, Ministry of Labour and National Service, 32, St. James's-square, S.W.1, though there is a waiting list at present for the London area.

NAVY, ARMY, AND AIR FORCE INSTITUTES. Applications are invited for the part-time appointment (1 session weekly) of OPHTHALMOLOGIST to this Corporation at their London Headquarters. A higher qualification is required and applicants must hold a hospital appointment.

Applications, stating age, nationality, and qualifications, together with the names of 3 referees, should be sent to the Chief Medical Officer, Navy, Army, and Air Force Institutes, Kennington-lane, London, S.E.11, not later than 17th May, 1958.

BIRMINGHAM. CITY OF BIRMINGHAM. Public Health DEPARTMENT. Applications are invited from registered medical practitioners for post of ADMINISTRATIVE MEDICAL OFFICER OF HEALTH (Male or Female). Candidates should hold the Diploma of Public Health. This is a sectional post and the Medical Officer will be primarily responsible to the Medical Officer of Health for the administration of activities relating to Maternity and Child Welfare Services but will also be available for all other work of the Health Department. Applicants should, therefore, have had extensive experience in maternity and child welfare work and experience in all other branches of public health. Salary scale £2065–£75–£100 (2)–£2340 p.a. Commencing salary within the scale will depend upon the Medical Officer's experience. Pension scheme (including widows and orphans); medical examination. The Officer appointed will be required to devote his/her whole time to official duties and the appointment will be subject to 3 months' notice on either side.

Applications, with names of 3 persons to whom reference may be made, to be sent to the Medical Officer of Health, Council House, Birmingham, 3, not later than 26th May, 1958.

THE MEDICAL SERVICE OF THE ROYAL NAVY

VACANCIES FOR MEDICAL OFFICERS

Candidates are invited for Short Service Commissions of 3 years, on termination of which a gratuity of £600 (tax free) is payable. Ample opportunity is granted for transfer to Permanent Commissions on completion of 1 year's total service. Officers so transferred are paid instead a grant of £1500 (taxable).

All entrants are required to be British subjects whose parents are British subjects, medically qualified, physically fit, and to pass an interview.

Full particulars from the Admiralty Medical Department, Queen Anne's Mansions, St. James's Park, London, S.W.1.

BUCKINGHAMSHIRE. COUNTY OF BUCKINGHAMSHIRE, BOROUGH OF HIGH WYCOMBE, AND MARLOW URBAN AND WYCOMBE RURAL DISTRICTS. Applications are invited from registered medical practitioners for the whole-time joint appointment of DEPUTY MEDICAL OFFICER OF HEALTH for the Borough of High Wycombe and the Marlow Urban and Wycombe Rural Districts, AND ASSISTANT COUNTY MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER for the Bucks County Council. Salary within the scale of £1099 12s. 5d.–£1520 3s. 10d. p.a. Travelling and subsistence allowances will be paid on the appropriate scale. The appointment is superannuable, and subject to medical examination.

Further particulars and form of application may be obtained from the County Medical Officer, County Offices, Aylesbury, to whom applications must be delivered by Monday, 19th May, 1958.

R. E. MILLARD, Clerk of the Bucks County Council.

County Hall, Aylesbury. May, 1958.

(RE-ADVERTISEMENT—REVISED SALARY)

MIDDLESEX COUNTY COUNCIL. County Health DEPARTMENT. SENIOR ASSISTANT MEDICAL OFFICER (Male) required initially in Area 6 (Wembley and Willesden). Whole-time for administrative and clinical work. Approval by Minister of Education for ascertainment of educationally subnormal children desirable. Diploma in Public or Child Health advantage. Required to act as Deputy Medical Officer of Health for Borough of Willesden for 40% of whole-time. Salary as for mixed appointments. £1693 13s. 4d.–£2058 13s. 4d. Established, subject to medical assessment. Prescribed conditions.

Apply, stating age, qualifications, experience, and names of 2 referees, to Joint Area Medical Officers, 215, Chevening-road, Kilburn, N.W.6, by 17th May (quote X.345L). Canvassing disqualifies.

MIDDLESEX COUNTY COUNCIL. County Health DEPARTMENT. SENIOR AIRPORT MEDICAL OFFICER required. Directly responsible to the County Medical Officer for the day-to-day administration of the Health Control Service and to the Ministry of Civil Aviation for the medical examination of air-crews, treatment of accident casualties, &c., at London Airport. Will also undertake such other duties as may be required. Shift duties necessary to provide 24-hr. service every day. Salary scale £1520–£1955 p.a. inclusive. Unestablished, subject to medical assessment. Prescribed conditions, which include vaccination against smallpox, prior to appointment and annually thereafter.

Apply (no forms), stating age, qualifications, experience, and names of 2 referees, to County Medical Officer (Ref. 'S'), 3, 5, and 7, Old Queen-street, S.W.1, by 14th May (quote X.344L). Canvassing disqualifies.

MIDDLESEX COUNTY COUNCIL. Principal Medical OFFICER required. Whole-time appointment on Central Office staff of County Health Department. Duties mainly concerned with administrative and advisory aspects of the personal health services under supervision of the County Medical Officer. Good scope for the exercise of initiative. Salary £1675–£50 (1)–£55 (7) –£2110 p.a. Established, pensionable, subject to medical assessment. Prescribed conditions.

Apply, giving names of up to 3 referees, to County Medical Officer (Ref. 'S'), 3, 5, and 7, Old Queen-street, S.W.1, by 24th May (quote X.343L). Canvassing disqualifies.

TREASURY MEDICAL SERVICE. Applications are invited from medical practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in parentheses after the place-names indicates the Head Post Office area in which the place, or group of places, is situated. Successful applicants will be required to examine and report on the condition of certain Government officers, teachers, candidates for appointment, &c., who may be referred to them from time to time; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to:—Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form on which application may be made. Applicants should be not more than 60 years of age.

The places for which applications are invited are as follows:—

ENGLAND AND WALES

Fulbourn, Cherryhinton (Cambridge).
Cheltenham (Cheltenham).
Immingham (Grimsby).
Leeds, 15; Cross Gates, Seacroft, and Scholes (Leeds).
Stockton-on-Tees (Middlesbrough).
Stroud (Stroud).
Stoke-sub-Hamdon (Yeovil).

SCOTLAND

Annan (Dumfries).
Fraserburgh (Fraserburgh).

NORTHERN IRELAND

Bangor (Belfast).
Irvinestown (Enniskillen).

YORKSHIRE. EAST RIDING OF YORKSHIRE COUNTY COUNCIL. Applications are invited from registered medical practitioners for the superannuable appointment of ASSISTANT MEDICAL OFFICER which will be centred on the Haltemprice Urban District (near Hull). Duties include those of a School Medical Officer and opportunities are available of gaining experience in public health administration. Conditions of service and salary (£1050–£1475) in accordance with Whitley Council recommendations. A car allowance will be paid in accordance with approved scale.

Application forms are obtainable from, and should be returned by 19th May, 1958, to, the County Medical Officer of Health, County Hall, Beverley.

THOMAS STEPHENSON, Clerk of the Council.

County Hall, Beverley.

WESTMORLAND COUNTY COUNCIL. Applications are invited for the post of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER, preferably from medical practitioners holding the D.P.H. or D.C.H. Duties will be in connection with the school health and maternity and child welfare services. Salary in accordance with the Whitley Council scale, at present £1050–£1475, plus travelling expenses. Starting salary according to qualifications and experience.

Application forms obtainable from the County Medical Officer, County Hall, Kendal, to whom they should be returned not later than 19th May, 1958.

GOVERNMENT OF BRITISH GUIANA. Registrar (anæsthetics) required to assist Specialist Anæsthetist in administering anæsthetics in Government hospitals. Candidates must possess qualifications registrable in United Kingdom. Diploma in Anæsthetics an advantage. Salary £1500 p.a. Appointment on permanent basis with pension (non-contributory) 1/600th of final pensionable emoluments for each completed month of service or on contract for 3 years' resident service with gratuity (taxable) of 22½% of salary for each completed 3 months' service. Candidates from National Health Service may retain superannuation rights during service abroad (up to 6 years) and receive gratuity of 20% of salary on leaving overseas employment. Free unfurnished quarters or allowance of £100 a year in lieu. Free passages on appointment for officer, wife, and children under 18 years, up to 5 persons in all. Free return passages on completion of 3 years' contract. Assisted passages on leave.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting BCD.117/30/011).

GOVERNMENT OF THE EASTERN REGION OF NIGERIA. Applications invited from doctors with medical qualifications registrable in the United Kingdom for the following posts:—

MEDICAL OFFICERS for general medical duties in urban and rural areas. "R" practitioners, i.e. practitioners liable for call-up under the National Service Acts may apply and, if appointed, will be granted indefinite deferment of call-up on completion of minimum tour of 2 years.

MEDICAL OFFICERS OF HEALTH for administration of environmental hygiene, maternal and child welfare, school health, health education and control of communicable diseases. Women eligible, and would be encouraged to concentrate on school health and welfare duties. At present emphasis is being placed on development of a school health service and on tuberculosis control. Officers may be required to visit rural areas around the township where their principal responsibility lies. Candidates must possess D.P.H.

Appointments on contract with gratuity (taxable) payable on completion of satisfactory engagement at rate of £37 10s. for each completed period of 3 months' service (including leave). Salary scale £1344–£2118 a year for Medical Officers and £1530–£2118, plus £100 a year staff pay, for Medical Officers of Health. Quarters provided at rental of 10% of salary. Taxes at local rates. Annual local leave permissible; generous home leave after each tour. Free return passages for officer and wife; and, when appropriate, either (but not both) of the following in any one tour of service:—

(*a*) 1 return sea passage for each of 2 children under age 18 subject to maximum of £75 for the return journey for each child, or

(*b*) An allowance of £75 a year for each of 2 children under age 18 maintained outside Nigeria for the whole tour.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting BCD.117/411/05).

GOVERNMENT OF SARAWAK. Male Medical Officers required in Sarawak to undertake travelling duties in country districts. Must be prepared for arduous travelling between widely separated villages; warm welcome, however, from friendly villagers. Candidates must possess qualifications registrable in United Kingdom and must be unmarried. Appointment on contract for 3 years with gratuity (taxable) 12½% of salary (including inducement pay) for each completed period of 1 month, payable on completion of contract. Candidates from National Health Service may retain superannuation rights and receive gratuity (taxable) of 20% of aggregate salary at end of engagement. Salary scale £1218–£1988 a year, starting salary depending on qualifications and experience. In addition, inducement pay varying from £252 to £336 a year. Free furnished quarters and free passages provided. Income-tax at local rates. Local leave permitted and generous home leave on completion of service.

Application forms and fuller particulars from Director of Recruitment, Colonial Office, London, S.W.1 (quoting BCD.117/24/015).

GOVERNMENT OF SARAWAK. Medical Officers required in Sarawak for general medical duties. Candidates must possess medical qualifications registrable in United Kingdom. Appointment on permanent basis with pension (non-contributory) or on short-term contract with gratuity (taxable) of 12½% of salary including inducement pay, for each completed period of 1 month, payable on completion of satisfactory service. Candidates from the National Health Service may retain superannuation rights (up to 6 years) and receive gratuity (taxable) of 20% of aggregate salary at the end of their engagement. Basic salary scale £1218–£1988 a year, starting salary determined according to qualifications and experience. In addition inducement pay (pensionable) is payable varying from £252 to £336 a year, education allowance of £140 a year for up to 2 children between ages of 15 and 17 educated in country of domicile and a child allowance of 7½% of basic salary (maximum £140 a year) for married officers with dependent children under age 18. Partially furnished quarters provided, at low rental. Free passages provided in both directions for officer, wife, and up to 3 children under 18 years of age. Low taxation. Local leave permitted and generous home leave granted.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting reference BCD.117/24/01).

General Practice

For an ***Executive Council post*** *(England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."*

BOROUGH OF BARNES (East Sheen). Applications invited for VACANCY which will arise on 5th July, 1958, in above Borough. (Intermediate.) List at present about 2750. Retiring doctor's residence and surgery available for purchase. Applications on forms E.C.16A to reach the undersigned not later than 14th May, 1958.

S. H. BENNETT, Clerk of the Council.

Surrey Executive Council, 187, Ewell-road, Surbiton, Surrey.

LIVERPOOL. Wavertree Parliamentary Division. Applications invited for a medical practice. Doctor retiring. Practice suitable for a woman practitioner. List approximately 1800. Premises available for purchase. Apply on Form E.C.16A to the undersigned, by Thursday, 15th May, 1958.

J. G. DONCASTER, Clerk, Liverpool Executive Council.

36, Princes-road, Liverpool, 8.

MOLD, FLINTSHIRE. Applications invited for Vacancy (Urban and Rural) due to resignation. List approximately 2480. Residence and surgery available. Apply on Form E.C.16A before 14th May, 1958, to:—

TUDOR WILLIAMS, F.C.I.I.,

Clerk of Denbighshire and Flintshire Executive Council.

11, Grosvenor-road, Wrexham.

URBAN DISTRICT OF CARSHALTON (Carshalton BEECHES). Applications invited for VACANCY which will arise on 5th July, 1958, in above Urban District (Intermediate). List at present about 800. Retiring doctor's residence and surgery available for purchase. Applications on forms E.C.16A to reach the undersigned not later than 14th May, 1958.

S. H. BENNETT, Clerk of the Council.

Surrey Executive Council, 187, Ewell-road, Surbiton, Surrey.

Hospital Services: Non-Medical Appointments

DUBLIN. THE CHILDREN'S HOSPITAL, Temple-street. A vacancy exists for a SPEECH THERAPIST.

Kindly apply, with references and experience, to The Mother Rectress, Children's Hospital, Temple-street, Dublin.

Miscellaneous

Boots Pure Drug Company invites applications from registered medical practitioners for an appointment as Assistant Medical Adviser in their Medical Department. This is a new and permanent full-time appointment which will offer considerable scope for work of varied medical interest, both at home and abroad. The Medical Department works in close cooperation with the Research Department of the Company and is also responsible for the organisation of clinical trials, the provision of a comprehensive medical information service, and the supervision of medical literature. Applicants should have had several years' clinical experience and preferably some experience of clinical and laboratory research. A higher qualification is not essential but would be an advantage, as also would some knowledge of a particular medical specialty. Salary will be according to age and experience.—Applications, stating age, qualifications, and giving full particulars of medical experience, should be sent to the Personnel Manager, Boots Pure Drug Company Ltd., Nottingham.

Imperial Chemical Industries Limited has a Departmental vacancy of a senior nature for a qualified Medical Practitioner in connection with the development of pharmaceutical products at home and overseas. Experience of clinical medicine both in hospital and general practice is essential. Salary would be in accordance with qualifications and experience and applicants should be under 35 years of age.—Applications, with full particulars, should be addressed to the Staff Manager, IMPERIAL CHEMICAL INDUSTRIES LIMITED, Pharmaceuticals Division, Fulshaw Hall, Wilmslow, Cheshire.

The Steel Company of Wales Limited wish to appoint an Assistant Medical Officer (Male) to their Margam Works at Port Talbot. Candidates, aged 26–34 years, should have good clinical background, including practical casualty experience and an interest in preventive medicine, but first-hand industrial experience is not essential. Appointment will be conditional on a successful medical examination. Commencing salary within the current B.M.A. range for whole-time Assistant Medical Officers in industry. Contributory pension scheme in operation.

Application forms should first be obtained from the Superintendent, Personnel Services, The Steel Company of Wales Ltd., Abbey Works, Port Talbot, Glam.

British Medical Association. The Council of the British Medical Association invites applications from registered medical practitioners of both sexes, not over 35 years of age, for the post of Assistant Secretary. The salary will be £1850, rising by annual increments of £115 to a maximum of £2890 p.a. In exceptional circumstances the initial salary may be above the minimum of the scale. The Association superannuation scheme will apply on substantive appointment. The appointment will be for a probationary period of 6 months in the first instance and thereafter may be terminated by 6 months' notice on either side.

Applications, giving details of qualifications and experience and accompanied by the names of 3 persons to whom reference may be made, should be addressed to the Secretary of the Association at B.M.A. House, Tavistock-square, London, W.C.1, and must be received not later than 7th June.

Cardiographer seeks Locum Tenens position, South London, North Kent.—Address, No. 394, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Assistant required. Varied work to 2 partners. No view. Furnished accommodation provided suitable 1 child only. Industrial Birmingham. Salary by arrangement.—Address, No. 395, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Australia, Queensland. The Associated Friendly Societies. Medical Officer required for Bundaberg. Salary £A1250 p.a. plus free residence and services. Private practice allowed, estimated £A1500. Fare paid.—Full particulars obtainable from Agent-General for Queensland, 409, Strand, London, W.C.2.

Medical Officer required by Mining Company in Sierra Leone. Applicants should have wide general medical experience and ability to do emergency surgery. D.T.M. & H. an advantage. Commencing salary £2400 p.a. plus 5% bonus plus, for married man, £10 per month marriage allowance and £5 per month for each child under 18. Salary reviewed annually. Retirement under contributory pension scheme at age 55. Tours of duty approximately 15 months followed by liberal leave on full salary in U.K. Return passage paid, free furnished quarters. Life Assurance and Dependants Income Schemes.

Write, giving full particulars, stating age, married or single, to Sierra Leone Development Co. Ltd., Department MO., 2, City-Gate House, Finsbury-square, E.C.2.

Nchanga Consolidated Copper Mines Limited, Northern Rhodesia. A Medical Officer is required for service in Northern Rhodesia by Nchanga Consolidated Copper Mines Limited to do general practice amongst both the European and African communities under the direction of the Company's Chief Medical Officer. 3 to 4 years' postgraduate experience in general practice is desirable. The Company has 2 modern and well-equipped hospitals and 7 Medical Officers are employed, including a Surgeon. The minimum basic salary offered is £1743 10s. p.a., part of which is deemed to be in lieu of private practice. In addition there is a fluctuating cost-of-living allowance which, at the present time, is about £5 per month, and a fluctuating bonus based on the price of copper; at the date of this advertisement the bonus is about 10% of basic salary. There is a contributory pension scheme and free life assurance. The outward passage of the Medical Officer and his wife and family is paid by the Company. Assistance in the form of an interest-free loan may be granted for the initial purchase of a car in Northern Rhodesia. Leave is at the rate of 51 days p.a., cumulative up to a minimum of 153 days. Married accommodation partly furnished is available at a nominal rental.

Application forms may be obtained on application from Nchanga Consolidated Copper Mines Limited, 40, Holborn Viaduct, London, E.C.1.

Sudan. British (Male) doctor required about August for Nursing Home which employs British Matron and British Nursing Sisters and serves British residents. Tropical experience preferred. Age under 50. Free furnished house, annual home leave with free air passages, including family. Salary £S.2500 (a Sudanese £ is equivalent to £1 0s. 6d.). There is no income-tax in the Sudan at present. Possibility of private practice.—Apply Airmail, The Hon. Secretary, Harper Nursing Association, P.O. Box 97, Khartoum, Sudan, Africa.

Doctors requiring applications, theses copied: Write to MANTON (WESTMINSTER) LTD., 98, Victoria-street, S.W.1 (VIC. 0141), who are specialists.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimens of urine and £2 2s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Surgical instruments. Second-hand general set wanted. Address, No. 392, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Old medical and scientific books, pictures, manuscript notebooks, letters, &c., wanted by a collector.—Address, No. 343, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Typewriting and Duplicating. First-class work at moder- ate prices by experienced medical typists. Electric machines. —SYBIL RANG, 21, Heath-street, Hampstead, London, N.W.3 (HAM 5329/0504).

Last Minute Holidays Abroad. If you do not like mass tour arrangements we give personal attention to your holiday—rail or sea—with good hotels in every grade and all countries. Write or phone: BUSINESS AND HOLIDAY TRAVEL LTD., Grand Buildings, Trafalgar-square, London, W.C.2. WHitehall 4114/5.

Expert medico-legal photographic service. Accident, injury, claims. Any location.—Address, No. 370, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2, or PEGGY DELIUS, WEL. 7788.

Medical and general typing and secretarial services. Josephine Hall & Partners Limited, 32, Rupert-street, W.1. Works up to 250,000 words can be completed within 24 hours. Experienced medical secretaries available by day, hour or week.—GERard 1067.

Pregnancy Diagnosis (Fee 21s.). Specimens of urine accepted for testing (Hogben test) from doctors, hospitals and clinics anywhere. Results available within 24 hours. Fee reduced for hospitals and clinics. Telephone or write for details: FAMILY PLANNING ASSOCIATION, 64, Sloane-street, London, S.W.1. SLOane 0451 or 9112.

Nursing Home for disposal in good-class residential area facing park, North London. 2 intercommunicating semi-detached houses and comprising 16 bedrooms, 7 reception rooms, kitchen, bathrooms, &c. Large gardens, garage. Lease 50 years, ground rent 24 gns. Price £10,500, including goodwill, fixtures, and fittings.—DONALDSON & SONS, 70, Grand-parade, N.4. STA. 7441.

2 Maisonettes to Let for both residential and professional purposes.

Wimpole-street. Third and fourth floors. Lift, central heating, constant hot water, 7 rooms, kitchen, bathroom and cloakroom. Lease 10 years. Rent £400 p.a. inclusive. Price £2950.

Devonshire-place. Third and fourth floors. 6 rooms, kitchen, and 2 bathrooms. Lift, constant hot water. £400 p.a. inclusive. Lease 21 years. Price £4250.

Apply, sole agents: ELLIOTT, SON AND BOYTON, 86–87, Wimpole-street, London (WELbeck 8367).

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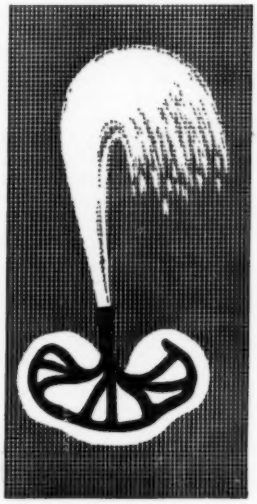

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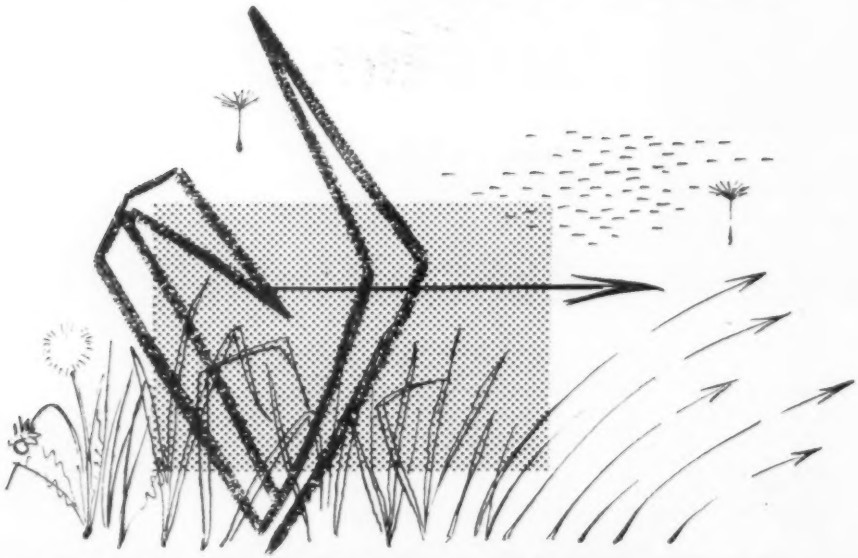
* B.M.J., 1957, 2, 1355; 1363.
LANCET, 1957, 2, 831.
LANCET, 1958, *1*, 120; 124.

Literature gladly supplied on request.

MERCK SHARP & DOHME LIMITED, HODDESDON, HERTS.

In hay fever and perennial vasomotor rhinitis



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Each Duolet contains 8 mg. Piriton (Chlorpheniramine) maleate; 4 mg. in the outer shell for immediate action and 4 mg. in the specially-coated inner-core, for delayed action. Bottles of 25 and 250 Duolets.

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